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February Forecast Issue

• One industry's finished products are the raw materials of another. Our studies indicate that better than one-third of the food sold in this country is sold to other food industries.

• Trends and the probable future of production volume are important for everyone to know. If we don't lose our nerve we plan to devote the entire February issue to a forecast of what's ahead.

• Weather conditions also will have a very important bearing on the volume of raw-material production. We will not promise to tell you all about the weather to expect for 1933 but, if nothing prevents, we shall present the essential data on which to do your own forecasting. To get the material together has required over a year of work on our part and endless work on the part of others.

• You will want extra copies of the February issue for filing and for clipping and passing around your organization. Order them before Jan. 15, 1933.

• Our new department — operating motor trucks in the food industries — continues and will be a feature throughout the year. All operating men and executives need this information, whether the company owns one truck or five thousand.

March Packaging Number

• If you want to see any special discussions on packaging, now is the time to write the editors about it. We have our own ideas, but sometimes we can be persuaded to listen to reason. THE EDITORS.

FOOD INDUSTRIES

The Journal Devoted to the Problems of the Food Manufacturer

LAURENCE V. BURTON, *Editor* — M. A. WILLIAMSON, *Publishing Director*

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Copyright, 1933, by McGraw-Hill Publishing Co., Inc.
Contents indexed monthly in the Industrial Arts Index

Published monthly, $2 per year. Foreign, $3, or 15 shillings. Canada (including Canadian duty), $2.50. 25 cents per copy. Entered as second class matter April 30, 1929, at the Post Office at New York, N. Y., under the Act of March 3, 1879. Printed in U. S. A. Cable address: "McGrawHill, N. Y." Member A.B.C.

McGraw-Hill Publishing Company, Inc., 330 W. 42d St., New York, N. Y.

Branch offices: 520 North Michigan Ave., Chicago; 883 Mission St., San Francisco; Aldwych House, Aldwych, London, W. C. 2; Washington; Philadelphia; Cleveland; Detroit; St. Louis; Boston; Greenville, S. C.; Los Angeles. James H. McGraw, Chairman of the Board; Malcolm Muir, President; James H. McGraw, Jr., Vice-President and Treasurer; Mason Britton, Vice-President; Edgar Kobak, Vice-President; H. C. Parmelee, Vice-President and Editorial Director; Harold W. McGraw, Vice-President; C. H. Thompson, Secretary.

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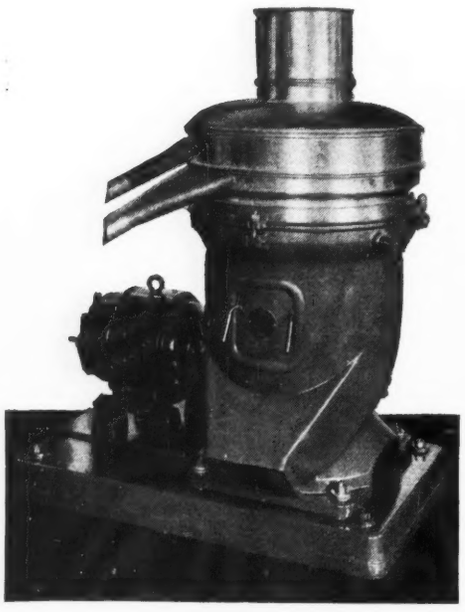

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FOOD INDUSTRIES

The Journal Devoted to the Problems of the Food Manufacturer

Volume 5.....Established 1928—McGraw-Hill Publishing Company, Inc.....Number 1

NEW YORK, JANUARY, 1933

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Laurence V. Burton, Editor

Down to Fundamentals Of Food Distribution

AS LONG as that statistical myth, the average American, consumes only 2,150 pounds of food in a year, it is perfectly possible for anyone to calculate for himself just how much food will be—nay, can be—consumed in 1933 in this country. Likewise, anyone can easily determine for himself that there can be no real gain by producing more food than the nation needs. Overproduction and its immediate cause, overcapacity, do not cause the consumer to eat more. They only enable him to pay less. Therefore, feeding the nation is a task of a definitely limited size.

● CUTTING PRICES to a profitless point may lure many a consumer to purchase the cut-rate item, but gains in volume for any individual food commodity or any individual brand are always at the expense of other foods. And gains in volume made in this way usually lead to retaliatory measures. Price cutting is a game at which two can play, as all must learn to their sorrow.

● EVERYONE in the food industries, whether in sales, production or management, must learn and reckon with the limitations of human eating capacity. If food were absolutely given away there would be no annual increase in net consumption of *total food* which could be revealed by statistics.

● IN A PERIOD of declining prices, such as today, the real fundamental solution of the problems of distribution—the long-time answer to the question of how the manufacturer can sell at a profit—must come primarily from management and production men. It will come when they work cooperatively with a full understanding of all the problems that face the industry.

● NOT UNTIL the productive capacity of the food industry is correctly geared to the consumptive capacity can the majority who are in the business hope to make a profit.

● PRIMARILY readers of *Food Industries* are production men and top executives. Their chief jobs are manufacturing, but only when they understand how production fits into the coordinated whole can they function most effectively. Without a comprehension of distribution the operating force cannot plan and develop their side of the business to the greatest advantage.

● IF THE SOLUTION of distribution problems requires slower rates of manufacture, to be accomplished without an increase in unit cost, who but the production man can solve them? If goods must be better protected from the ravages of the physical act of distribution through better treatment or better packages, who but the food engineer is to solve the problem?

● TO BETTER, broader, more far-seeing, fundamentally thinking food engineers, who must know not only production but economics, trends, legislation and distribution, this issue is dedicated.

...AS IT LOOKS TO US

Get Into It Yourself

When the new administration calls a special session of Congress it is likely that tariffs will come up for revision, and now is the time for manufacturers to prepare for that event. No greater mistake could be made than to leave the tariff fight to the secretary of the association representing an industry.

The testimony of a number of manufacturers who are actually active in the affected industry is much more effective than the individual testimony of the association secretary. The secretary should take part in the hearings, but his solitary presence is not the evidence of a united front such as is demonstrated by a group of manufacturers who have gotten together and agreed on a program.

•

Fetish

Clear liquors and clear solutions are often more appealing to the eye than to the appetite. The pursuit of clarity can be carried far beyond the bounds of common sense. With the exception of a very few products like vegetable oils, cider, vinegar and most carbonated beverages, the clearer the liquid, the less the flavor. Orange juice, for example, can be filtered clear and about all that remains is sugar, citric acid and water. It is no longer orange juice. The liquor on canned peas can be made clear, usually at the expense of flavor, by overblanching. Clarity can be made an absurd fetish, and filtration has practical common-sense limitations.

•

Who Is the Winner Here?

When the Federal Trade Commission went shopping in four cities it found that 50.3 per cent of items purchased from chain stores and 47.8 per cent from independents and cooperative chains were short weight. Net shortages for chains was 0.3 per cent, compared with net overages of 0.143 per cent for independents, based on the total quantity bought, while overages and shortages exactly balanced for the cooperatives. The commodities purchased were navy beans, lima beans, lightweight sweetened crackers, and sugar.

The commission further states that the net shortages of the chains amounted to 3.41 per cent, based on a 10.6-time turnover per year. From the data available one cannot calculate whether the consumer gains or loses by this shortage, for packages do cost something. However, if chain stores are forced to defensive measures it certainly looks as if factory packaging were indicated as the next step.

•

Company Politics

Whenever a company is unfortunate enough to get into financial hot water—an unhappy condition that is not rare these days—cliques always develop in the organization. Each group is certain that its particular philosophy of business is the right one to save the concern from disaster. It would not be so bad if they stopped right there, but they never do. If conditions become worse a defensive psychology grows throughout the organization which will defeat all aggressive moves on the part of the self-starters.

Each group begins to think negatively, to prepare its alibi first in anticipation of a wrong move. And how the boys do love to hang any misfortune on the unhappy cause of any mishap! The ultimate result is that anything constructive is seldom done. Finally, when things get very bad, the cliques develop a "rule or ruin" policy, and when that time comes all the fun that comes out of hard work is gone. Life is a drudgery and the heart is heavy.

Readers who have been through other depressions know all about it. Company politics are bad—awfully bad. Many a good man has been bounced out of a good job just because he was in the losing clique.

Men who are wise do not gossip, do not carry tales behind backs. If they have a really constructive thought and are very sure it is sound, not silly, they take it to their superiors or speak out in open meeting where there is opportunity for debate. If they have no notion of how to better the business, they keep their mouths shut and do not contribute to conspiracies, even though the conspiracy may have the doubtful purpose of saving the company from disaster. If there ever is a time when team work is needed in the internal organization it is now.

Prizes

Cutting merchandising costs by the use of "prizes" is hoary with age, yet it has its pitfalls. At least twice last year candy was seized and the manufacturers were penalized because of metallic "prizes" embedded in the pieces of candy. In addition to introducing a toxic contamination, the "prizes" were condemned as being hazardous. They were likely to cause damage to the teeth and to be aspirated into the bronchial tubes of the child consumer.

Other manufacturers have been guilty of merchandising the prize instead of the product of their manufacture. Result: The manufacturer of the prizes did a profitable business.

•

Good—For a Time

Loss leader merchandising, like free deals and high tariffs, is a good thing only as long as only one concern or one country is doing it. As soon as everybody has them, they cease to be sound practices. Tariffs, however, cannot be safely applied or removed, for behind tariff walls grow up new industries that increase the productive capacity of the individual country. But when all are playing with loss leaders and free deals, the results are not so hot.

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Compliment

"No one need be told, and few need to be reminded, that there is now overproduction of all farm products"—excerpt from annual report of Dr. U. P. Hedrick, director New York Agricultural Experiment Station, in which he comments on the changes in policy of his institution. We hope other institutions acquire the same common-sense viewpoint.

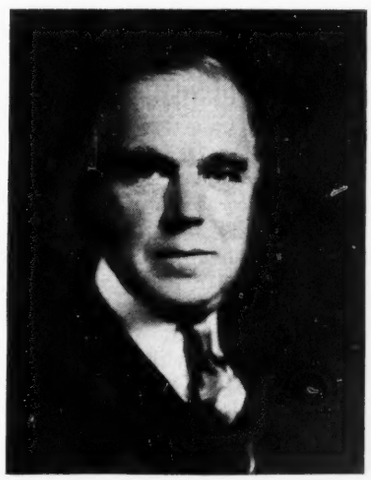
•

Precaution

The possibility of enactment of a federal or state sales tax is with us as long as Congress is in session and the national budget is still unbalanced. Management should be very careful about making sales contracts which may lead to difficulties if a sales tax is later imposed. We suggest the inclusion of a clause in all sales contracts that permits the seller to collect from the buyer a sum equivalent to the tax when, as, and if a sales or turnover tax shall be imposed by any jurisdiction, city, state, or national, in which the contract is effective.

What Lies Ahead In the Food Industry

By C. M. CHESTER
President, General Foods Corp.
New York, N. Y.



I TALKED with a keen student of business preparatory to setting down the remarks on these pages. That individual is a man who is not inclined to make predictions. But he did offer a story to illustrate where we have been and where we are going.

According to this analyst, right now we are in many ways like the men who sailed westward across the Atlantic with Christopher Columbus, in search of a new route to India. The trip was much longer than the crew expected, and the longer it lasted the more discouraging it seemed. The sailors became restless, talked of making trouble. Finally signs of approaching land began to be seen—branches with berries were floating on the water and land birds were in the air. Yet no land could be found. Each storm seemed more terrifying. Each day of waiting seemed to bring greater fear.

But all the time the ships were going in a straight line, and the captain each day wrote in his log book, "This day we sailed westward, which was our course." Finally the land rose out of the water; not exactly the land Columbus had been seeking, *but plenty good enough!*

Today we are still sailing through the storms of an economic sea. It has been a long and bitter voyage, but we are beginning to see signs of an eventual landing. There is improvement in the psychology of people, in banking, in gold supply. The deflation has gone to almost unbelievable levels in a majority of businesses. It has reflected itself particularly in drastic reductions of the visible supply of many processed or manufactured products. Actually, shortages of machinery, equipment and finished products appear in many directions.

We have at least one advantage over Columbus and his crew. They had no precedent to assure them that they would ever see land again. We have the reassuring knowledge that in several hundred years no business depression, no matter how bad or how long, failed to come to an end. And I believe our present stormy economic voyage will likewise come to an end.

Food Industry Strong

At this point it may be well to recall just how the food industry stands today in relation to all other American industries. For instance, it is well to remember that, of all people gainfully employed in this country today, about half work for the food industry, either directly or indirectly. This includes the farmers and the men who handle the transporting of food by rail, truck or boat. It includes the food-factory workers, warehousemen, jobbers, retailers, chain-store employees and all the many ramifications of the production and distribution system.

Taking the year 1926 as a "normal" year, employment in food products companies is today 87.1 per cent of normal, while employment in all industries averages only 59.9 per cent.

In 1929, when the national income was variously estimated as being somewhere between 78 and 89 billion dollars, the annual expenditures for food were figured at between 20 and 23 billions, or somewhere around 25 per cent. In 1932, with national income at about 45 billions and the value of the food consumed estimated at 15 billions, over 30 per cent of our national expenditures went for food. Food is indeed a most basic need, and the food business must go on.

Back to the Farm

I should like to review first the unfavorable factors in the food picture as it exists today, discussing later some of those that have more favorable aspects. An unfavorable factor which has had a tremendous effect on our industry but which received little attention is the migration of millions of people from the cities back to the farm. During the period from 1930 to the close of 1932, this movement has more than offset the entire decrease in farm population which occurred in the decade 1920-30, and its continuance during this winter is expected to bring the total farm population back about to the peak level of 1910, according to government experts.

Nearly every school child knows that for twenty years farms were being abandoned in nearly all parts of the United States. Many of the small towns in rural sections dwindled in size, while large cities grew by leaps and bounds. It is extremely significant that in three years' time the final effect of that process of two decades has largely been reversed. This rapid upheaval in

The depression has been long. It has been severe. The curtailed buying power of the masses has caused them to buy less food and food of lower quality. The back-to-the-farm movement and home and industrial gardening have hurt the business of the food manufacturer. And in the face of underconsumption the industry has overproduced. But, withal, the food industry is strongly intrenched—it has suffered little compared to business in general. And the storm has had some good influences. New ideas in products and packages have come to the fore. Production costs have been cut. Hope lies ahead. Most of the unfavorable factors have come with the general chaos; they will pass with it. Like the voyage of Columbus, the going has been rough, the outcome uncertain. Columbus did not land where he intended, but the goal attained was plenty good enough.

population is having far-reaching effects on the consumption of consumer merchandise. On the farm, a family usually raises much of the food which it consumes and, consequently, it buys less from stores than when it lived in the city. This applies to many other products as well as to food.

According to government figures, farm population gained 648,000 persons in 1931 alone. To this number must be added those thousands of people who started the back-to-the-farm movement late in 1929 and those other thousands who moved farmward in 1930 if we are to get any idea of the magnitude of this movement. Besides those returning to farms, many thousands left the cities for small rural towns and villages where part of the food supply is raised.

Home Gardens

Besides the movement back to the farm it is well known in the food trades that an increasingly large number of vegetable gardens have been in production during the last three years. The factory worker who has work for only two or three days a week, or perhaps no work at all, now has plenty of time, and considerable incentive, to cultivate a garden that will help him feed his family. Thousands bought or rented ground suitable for that purpose. In the suburban areas, many gardens formerly planted in flowers are now used to grow vegetables for the family. And gardening sponsored by industrial concerns contributes to the "home-grown" food supply. Many corporations acquired large areas and apportioned plots or produce to all employees and former employees who would actually "work" the ground to raise fruits and vegetables.

It is impossible to get accurate data, but it is believed that several hundred thousands—perhaps some millions—of families supplemented the store-purchased food supply with raised-at-home vegetables and fruits to a greater extent than they would have done had general business been good.

Furthermore, it is well known that thousands of men formerly employed in manufacturing plants on the seaboard or near inland lakes or streams have turned to fishing to supply the family table or as a livelihood. Some manufacturers of fishing tackle did a record-breaking volume of business in 1932.

Reduced Consumption

With the national income cut almost in half, the spending power of the average family has become greatly pinched. Expenditures have been restricted to absolute necessities in millions of homes. People who once bought a high grade of food, at least part of the time, have had to content themselves with the cheapest grades. A psychology of fear spread over the country and caused even people of moderate means to scrimp and save on everything they bought and to hoard whatever money they could save. And another factor contributing to curtailed buying is the tendency of people to waste less. Records from a number of typical cities show that less food is wasted per capita than in 1929.

While on the one hand we have seen consumption become less, we have on the other hand seen a vast overproduction of foods in this country. Over 100,000,000 acres more than was actually needed was under cultivation during 1932. There probably was the greatest glut of perishable foods ever known. Prices of fruits and vegetables in some centers reached ridiculously low points. A sales manager of a food company clipped some advertisements of these prices and filed them away, saying, "Some day, years from now, when we are complaining about low prices, let's get those 'ads' out of the file and see how low prices really did get."

Low Prices

Another element which has raised havoc with the food business is the commodity price situation. Prices fell rapidly, almost without a breathing spell, from 1929 until nearly the middle of 1932. While this temporarily aided some factors in the business which were able to buy at lower costs and yet maintain their selling prices, the general effects have been bad. Large inventory write-offs by manufacturers have been unavoidable. On a falling market, the trade has stayed close to shore, and throughout the industry stocks of processed goods were reduced to the lowest possible point. In this period of falling prices, quality of the product and service were overlooked, and price became a major talking point. Violent, and generally unsound, trade practices made their appearance.

It is significant to note that most of the aforementioned unfavorable factors originated largely beyond the control of the food business. In addition to these, there have been adverse influences within the trade itself. As sales volume fell off, many factors in the industry cast an envious eye on the profits of others and

stepped out of their own fields into functions for which they were not equipped, by training and organization, to perform.

Fear of competition and an effort to keep up volume have led to profitless selling practices which, in many cases, merely amount to swapping goods at no profit and often at a loss. About 75 per cent of the food is now distributed through dealers who depend primarily on price appeal. It is estimated that 45 per cent of the lines sold in food stores today do not carry a margin adequate to cover cost of distribution. The history of depressions shows that during business stagnation and money stringency, price becomes the main weapon in marketing. This is true despite the fact that those who wield the price weapon generally become victims of their own policy.

Constructive Factors

Let us pass to the pleasanter job of appraising the hopeful factors of the industry. First of all, some of the problems within the trade appear to be of a more or less temporary nature, and there are signs that the industry is now awake to their importance and is determined that they shall be corrected. In self-defense, various elements are showing a disposition to sit down and discuss profitless selling and work toward its elimination. Certainly, many manufacturers will do all they can to ease the situation for other manufacturers, jobbers or grocers, because all have invested their money, skill and experience in their businesses and are entitled to a just return on their investment of funds and effort.

In reviewing the business situation, it must be recalled that a majority of the aforementioned unfavorable factors are chiefly a result of general business conditions. Therefore, it follows that any sign of general improvement in business should reflect itself in betterment in the food industry. A gradual recovery will aid public purchasing power and improve buying sentiment. Population will undoubtedly flow back to towns and cities when business begins to recover. With increase in employment, the amount of home-grown vegetables and fruits will decrease. Improved purchasing power and less pessimistic public psychology also will encourage more and better buying. This will necessitate enlarged inventories for manufacturers, wholesalers and retailers. Profitless selling will decline as the flow of goods is quickened.

Food manufacturers in general have used the last three years profitably, effecting great economies in production and distribution which will have a more or less permanent influence on future cost of operation. They take comfort in the fact that the downward course of commodity prices has been arrested, temporarily at least.

In our own particular company, we have sought to put ourselves in shape to handle the realities of the current situation. We have revitalized several products which had long been on the market, such as coffee, gelatine, syrup, chocolate, cereals and so forth. This has been done in several cases by entirely new selling features in the product itself, such as the "Vita-Fresh" idea in coffee, whereby Maxwell House, due to an essentially perfect vacuum, keeps its roaster-fresh flavor until it reaches the ultimate consumer. Our Jell-O no longer needs boiling water in its preparation. Our cooking chocolate has been shaped into molds which are much more convenient for the housewife.

Improved types of packages which embody new selling features have been put on the market. For instance, Crisp-Pack has been employed to keep our cereals in fresher condition. In addition to improving established products and the serviceability and appearance of containers, we have introduced entirely new products, some of which have met with almost immediate success, notably Grape-Nuts Flakes and Bliss Coffee.

In our research laboratories we are continually studying a number of major projects. This work will result in important improvements in some of our present products or in the eventual development of products that are entirely new.

We have sought to meet changing conditions with changed emphasis in promotion and advertising.

Alongside the development of our regular line of grocery products, we have found the times favorable to making important progress in the field of quick-frozen foods. However, general business conditions during the last three years created a situation in the trade, and with the public as well, which made the progress of frosted foods naturally much slower than it otherwise would have been.

Quick-Freezing

Nevertheless, Birdseye frosted foods are now being sold in more than 400 retail outlets, many of them being very large and important establishments. Furthermore, more than 200 institutional customers, including hotels, restaurants, railroads and steamship interests, are now using Birdseye products. The number of outlets was more than doubled during the past twelve months, and expansion, although gradual, is constantly under way. Since Birdseye frozen foods were first put on the market, great improvements have taken place in methods of production, in methods of selecting and handling items, and in methods of distribution and promotion—in fact, in all phases of the business.

It must be remembered that the perishable food field furnishes nearly 80 per cent of all food consumed in this country, and only a small part of this is now sold under an advertised brand. With the American public highly sensitive to the protection which identification through advertising provides, it seems desirable, and more than feasible, that quite a portion of this enormous market be handled in quick-frozen form.

To summarize what has been said in the foregoing remarks regarding the outlook for the food industry, it must be emphasized that, despite its troubles, this industry of ours is busier than almost any other. Its basic stability is assured and its troubles, while they may seem mountainous, are troubles due chiefly to the great economic storm which has swept over the world. We in the food industry are mariners who, like others, have been sailing a stormy sea. But we know that storms never last forever and that we are going to land somewhere eventually, with conditions better than they are today. We think we understand what our problems are, and we are doing all we can to correct them.

Price Maintenance And the Business Recovery

By O. FRED ROST
Director, Surveys of Distribution
McGraw-Hill Publishing Co.

PRICE maintenance means profit maintenance, and profit is the objective in every business transaction. When the price is cut, the profit also is cut, and no manner of bookkeeping, or argument, or subterfuge can change that. Competition is generally cited as the original instigator of price cutting, and so it follows that as competition becomes keener, the knife of the price cutter must necessarily cut deeper.

Rarely is there any agreement of opinion as to who started the vicious circle of price cutting but it is always unanimously conceded that the other fellow should be the first to stop it. Legally the manufacturer or wholesaler is practically helpless to stop price cutting or insist on the observance of concededly fair wholesale or retail prices on his product. The law says, "Thou shalt not kill," and makes attempted physical suicide an offense, but it permits the price cutter not merely to commit acts of commercial suicide with impunity but actually to commit commercial murder, for his actions definitely rob others of the opportunity to survive.

These conditions did not always exist. Price maintenance was legally enforceable until the U. S. Supreme Court, in its famous Dr. Miles Medical Co. decision, decreed that under the present law it could not be tolerated. Several further decisions have served to clamp the lid tighter, so that price maintenance is now hopelessly outlawed unless refuge is taken in the consignment plan of selling.

When the Miles decision became a matter of record, it was not foreseen that the following two decades would witness an unprecedented process of industrial expansion that would finally carry the producing capacity of every industry far beyond its current need. This development of productive capacity continued practically unchecked until 1929. The growth of excess capacity in any particular industry could be easily measured by the rapidity with which competition deteriorated into a price-slashing orgy.

Many theories have been advanced as to what were or may have been the major causes of the 1929-19?? depression. No less an authority than Justice Brandeis, of the U. S. Supreme Court, in a dissenting opinion, called

"unbridled competition one of the major contributing causes of the depression." Few economists and fewer business executives will want to take issue with so eminent a jurist.

If it is conceded that unbridled competition was one of the major causes of the depression, it seems to follow quite logically that, as long as competition finds its freest expression in price cutting, any legal means for "bridling" the price cutter might be expected to contribute to our economic recovery in somewhat the same proportion as "unbridled" competition contributed to the depression.

During the year 1932 a number of developments occurred in widely separated fields that indicate a growing recognition of the theory that if orderly and non-monopoly-producing price maintenance is legalized, such a measure will add much and valuable momentum to any process of business recovery that may get under way with the new year. Despite the fact that these developments have taken place chiefly outside the food industry, even a casual analysis demonstrates that they are of direct and vital interest to every food manufacturer. It is important to note that the most concerted move toward finding a plan that will permit price maintenance has taken place in the drug industry, where price cutting has long been either vice or virtue, but in either event, an accepted practice.

It is of particular significance, however, that two major movements originated in the fields which up to 1932 have always offered the most stubborn resistance to legislation that might permit price fixing or price maintenance.

Of the major developments only the following can be given consideration within the limits of this article:

1. The Walgreen proposal for legislation that would permit "fixing" of a minimum resale price (C. R. Walgreen is president of the Walgreen chain of drug stores, second largest chain in the field).
2. The "price-upping" campaign in the drug-store field.
3. The recommendations by Prof. E. R. A. Seligman in his report on the economics of price cutting and price maintenance.
4. The trend of interested organizations to obtain legislation to permit price maintenance within states, if revision of federal laws is denied.
5. The "quality drive" in the department-store field.

During the last sixteen years practically all attempts to obtain passage by Congress of a bill that would permit price maintenance have centered around the names of Senator Capper and Representative Kelly. These two legislators have valiantly carried the banner, despite one defeat after another. While various national associations of manufacturers, wholesalers and retailers stood solidly behind these two champions, their combined strength was insufficient to offset the powerful opposition of which chain-store organizations and department-store groups were a most formidable nucleus. Experts in merchandising and authorities on retailing generally agree that neither chain stores nor department stores would have risen to the position of dominance which they today enjoy in some fields, if they had been unable to use the price weapon. This is particularly true in connection with the sale of merchandise that its manufacturer advertises at a specified retail price.

In the drug field this latter type of merchandise accounts for a substantial portion of the line. It therefore followed quite naturally that drug-store chains, in their hunger for sales volume, enjoyed an almost unlimited opportunity for using the hatchet on prices. While this practice naturally injured the business of the independent druggists, the wholesalers and manufacturers, the chain nevertheless thrived on it, at least for a while.

The change of heart, as reflected by

Mr. Walgreen's proposal, probably was forced by three factors:

1. Improved competition from independent druggists who under the guidance of their own organizations, wholesalers, and manufacturers have learned to copy some of the constructive chain-store methods.
2. The rapid increase, particularly in shopping centers, where chain drug stores are located, of the so-called "pine-board" type of drug stores, which openly advertise that they undercut chain-store prices, and which have managed to build up a large volume of business. Much of their business consists of fast-moving well-known items, which constitute the backbone of sales volume for the chains and which were sold by the chains at cut prices or even as loss leaders, so as to attract buyers for more profitable merchandise.
3. The substantial drop in the sales of profitable staples, due to general economic conditions, with the resulting need for making a definite and better profit on all goods sold.

It must be pointed out at this time that while this series of developments was completed in the drug field long before the business depression reached its 1932 summer depth, a parallel process is under way in the food field. Food manufacturers may therefore expect that executives of food chains will gradually arrive at a more sympathetic attitude toward some form of legislation that would permit price maintenance, because food chains also are feeling the pinch of the times and the "reward" of price-cutting practices. They will undoubtedly be less inclined to fight on their old battle front and some may even be aligned with Mr. Walgreen.

The original proposal made by Mr. Walgreen provided for a plan that would permit the fixing of minimum retail prices. However, after a conference with Senator Capper and Representative Kelly, Mr. Walgreen agreed that the bill drafted by them would meet his views and publicly announced that he would back their bill. Since then executives at the head of the Liggett, Peoples, Whelan and Nauheim chains of drug stores have expressed their approval of the proposed legislation. Thus, as the result of a costly price-slashing orgy, the proponents of price maintenance have gained some powerful allies.

The "Price-Upping" Campaign

Bearing in mind that the problem of legalized price maintenance is closely interwoven with the chain-store problem, and that the drug-store field has seen price cutting carried to disastrous excess, the price-upping movement, sponsored by a number of drug-store chains, bears much significance for the food manufacturer. This move was initiated by one chain-store organization, copied by some of its competitors, and since then has had widespread support by chains and independents, although there has been no indication of concerted action by any group or association to promote the idea. Publications in the drug trade, however, have made it a point to give the matter widespread publicity.

Some salutary results have been obtained, and in some districts where competition was particularly vicious the price level on a number of fast-moving items has been brought back to a point where it will no longer lead to bankruptcy. Food manufacturers should take encouragement from the fact that experienced observers have reported definite signs of a trend toward "price-upping" among chains that operate in certain thickly populated sections of the Eastern and Central Western states.

The Seligman Report

Prof. E. R. A. Seligman, of Columbia University, in an exhaustive survey of "Price Cutting and Price Maintenance," concludes that "cut-throat competition brings no real benefit to the public in the long run" and recommends among other things legislation that would permit:

1. Interchange of information in the trade about price cutters.
2. A trade tribunal, similar to the Federal Trade Commission, but manned by business men.
3. Contracts that would restrain wholesalers or jobbers from selling a manufacturer's goods to retailers to whom such manufacturer does not want to sell.
4. Legal process by a manufacturer against those who violate his distribution-controlling contract.

While some of the Seligman findings and recommendations may be subject to attack, it is generally conceded that the authority behind this report will give it much weight as a weapon in the hands of price-maintenance proponents.

To the food manufacturer who has or seeks national distribution, enactment by a state of "fair trade" legislation patterned after the Capper-Kelly bills can bring no immediate benefit, but it marks progress in the right direction and serves to focus attention upon the need for action by Congress.

California enacted what was popularly called a "Junior Capper-Kelly bill" early in 1931. In the absence of similar laws in adjoining states, the effort has encountered severe handicaps, although in some directions definite benefits have resulted. The opinion has been expressed that it will have served its purpose if, considered as a protest vote, it hastens action by Congress.

It is, however, significant that, in the legislatures of Massachusetts and Kentucky, bills patterned after the California law have been introduced. From other states it is reported that movements are under way to secure the passage of laws permitting price maintenance in intrastate trade.

In former years, dry goods and department stores have always presented a united front against any attempts to deprive them, through legislative action, of one of their most cherished competitive weapons: price cutting. The individual and organized opposition originating in their group has been considered as one of the chief reasons why congressional action to legalize price fixing has always failed.

It is evident that in this group the shoe of depression has begun to pinch. Annual studies of the operating costs of department stores show a steady increase in overhead. Forecasts made by executives who are in position to know indicate that for 1932 the operating cost will reach or perhaps top 36 per cent. While prices are at their present level and competition continues with undiminished ferocity the "margin" of gross profit cannot readily be boosted, and such high operating expense might eventually prove disastrous.

Relief can come from one direction only: Through cultivation of public demand for goods of higher quality, which would mean at higher prices, the gross volume of sales can be lifted so as to push the overhead percentage to safer levels. Higher prices will mean fewer loss leaders, fewer cut-price sales, fewer violations of suggested retail price schedules. These sentiments appear to be reflected in the famous "quality drive" which was inaugurated during the summer of 1932 and is at this writing still in progress.

It is therefore entirely reasonable to expect that the opposition from this quarter to price-maintenance legislation, thanks to the sobering effect of the depression, will be much milder.

An intimate part of the subject of price maintenance is the steadily growing sentiment in favor of modernization of the 40-odd year old Sherman Anti-Trust law. In every line of industry where price maintenance might be employed without injury to the interests of the public, the cumulative effect of over three years of depression has exposed evidence in its favor. There is no better argument in those fields where price-cutting practices have depleted reserve funds to the vanishing point, or caused excessive failures and huge losses to the public and the investor, than the fact that those now remaining in business are attempting to climb back to stability and a firmer foundation via practices and promotions that imply support of legalized price maintenance.

Thus it is not unreasonable to expect early action by Congress to sanction price fixing, as a large percentage of its former opponents are depression worn and ready to take the bitter pill, in the hope that it may cure some of their ills. Many economists, industrialists, and wholesale and retail executives agree that we cannot expect business to improve until prices improve. Price maintenance, if legalized, would provide the much needed framework around which a higher general level of prices might be built in any given field. The "bridling" of competition thus effected would then become a valuable constructive factor in business recovery.

The Food Manufacturer Profits When a Voluntary Chain Does Its Job

An Interview With

ARTHUR P. WILLIAMS

President, R. C. Williams & Co., Inc.
New York, N. Y.

By O. Fred Rost

In this interview Mr. Williams not merely sketches the general plan, the method of operation, the details of service and cooperation which are extended to those independent grocers, who have become members of the Royal Scarlet voluntary chain but he also gives some significant figures to demonstrate how this operation of his company has definitely benefited manufacturers of various food products through increasing their sales and providing them with more stabilized distribution.

VOLUNTARY chains are neither new nor can they, as a class, be considered even a comparatively recent addition to the various types of agencies through which food is distributed. Some of the largest and most successful voluntary chains functioning in 1933 have been in operation for many years. Several have been in existence for two or three decades and their plan of operation has served as a pattern for numerous other voluntary chain organizations that have come into being during recent years.

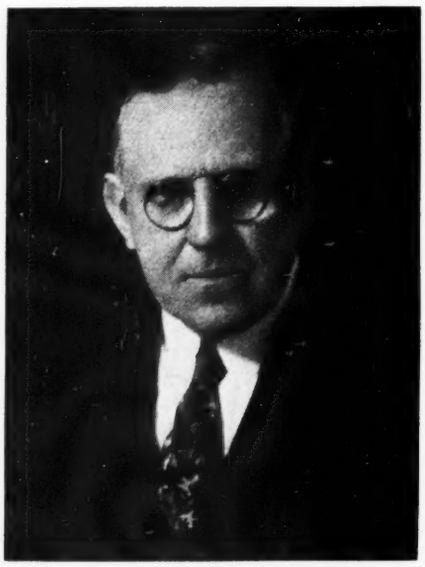
The reason the food industry is directing its attention to a steadily increasing degree upon voluntary chains lies in the fact that these organizations, as a group, since 1928 have achieved a position of dominance which was not anticipated.

One voluntary chain, the Independent Grocers' Alliance, highly organized under a rigidly enforced plan of procedure, according to recent reports has today over 10,000 independent grocer-members and claims for these an aggregate sales volume of $500,000,000 annually.

In tabulations made early in 1932 the American Institute of Food Distribution recognizes throughout the country over 700 voluntary chains of the various types and credits these with over 80,000 retail stores. The significance of these figures grows when a comparison with a similar tabulation, made by the same authority a year previously, discloses the fact that in just one year the number of such organizations grew 25 per cent, from 550-odd early in 1931 to 700-odd in 1932. In the same period the number of stores affiliated with voluntary chains grew 33 per cent, from 60,000-odd to 80,000-odd.

These figures appear to demonstrate conclusively that the voluntary chain system is becoming firmly intrenched as a practical and desirable and perhaps actually necessary agency through which independent manufacturers, wholesalers and retailers can cooperatively and economically distribute many products of the food industry to the consumer. It follows that food manufacturers must expect to take advantage of this distributing agency just as extensively and as rapidly as properly functioning organizations can establish actually valid claims for recognition.

While fully cognizant of the several types of voluntary chains that have



Arthur P. Williams

sprung up, it appears that those which are organized and operated by a wholesale grocer provide the safest and perhaps most stable and economical outlet. No new organizations, personnel, warehouse equipment, office staff, or rolling stock are required. Existing facilities are used with obviously resulting benefit to the retailer-members while sponsorship to a voluntary chain apparently has had a revitalizing influence upon wholesalers, of which the benefits have become evident in many directions.

The firm of R. C. Williams & Co., Inc., is known in the food industry from coast to coast. It passed the century mark of continued existence in 1911. It is one of the few wholesale grocery houses which through so long a career have remained under the guidance of descendants of its founder, its president, Arthur P. Williams, representing the fifth generation of Williams actively engaged in the management of the business.

When the firm decided, in 1930, to supplement its existing markets with a voluntary organization it followed that decision with an exhaustive investigation of the various types and many different individual organizations that then were found in operation. From the facts, data and observations thus obtained was evolved the plan under which the voluntary chain of Royal Scarlet stores was established. It has been operated less than three years, but in that period has grown from none to over 500 member stores.

The Royal Scarlet Stores Plan

"We spent much time in the careful study and observation of various types and sizes of voluntary chains before we, ourselves, finally entered the field," said Mr. Williams. "We recognized fully that this method of selling was almost completely new to us, but we felt also that, after having served the grocers of our territory for well over one hundred years, we knew probably as much as any one organization about the requirements of that territory and about the number and type of retail grocers that could reasonably be considered as candidates for our voluntary chain.

"Therefore, our problem seemed to be that of gleaning from the various plans such features as appeared to be

economically sound, thoroughly practical, and yet could be expected to appeal to our prospective members as we know them after many years of business relations with them. Thus the operating plan for Royal Scarlet stores as finally adopted is perhaps unique in that it represents a combination of features, each of these taken from some already existing plan, each in itself not new and yet the composite as such probably is new, because to our knowledge no other voluntary chain is operated on indentically the same basis.

"While the preliminary process of studying many different plans may have delayed the launching of our chain, it served to instill into our entire headquarters organization a state of retail-mindedness which afterward contributed most definitely to whatever success we have achieved. In fact, I believe that one of the first requirements in the successful operation of the voluntary chain is a thorough knowledge of retailing and retailers' problems. Without the understanding that such knowledge brings, no manufacturer or wholesaler could effectively plan for the type of cooperation with retailers that will positively result in increasing sales and that will establish the very desirable intimate and profitable contact between buyer and seller. In other words," said Mr. Williams, "no one can be successful as leader of a group of retailers when he is thinking in terms of the manufacturer or wholesaler."

Mr. Williams was asked to sketch briefly the general plan of operation, and this is the outline he gave:

"It is common knowledge that voluntary chains have come into prominence because independent manufacturers, wholesalers, and retailers needed some instrument with which to preserve their independent existence against the onslaught of centrally owned chain competition. Since no one can deny that some of the better chain stores have developed a highly efficient and thoroughly effective method of retail merchandising, it seemed logical that any organization of independents formed to combat the chain-store invasion could profitably copy some of the chain-store methods.

"Thus Royal Scarlet stores in both their exterior and interior appearance present a certain minimum similiarity. Expert merchandisers from our headquarters staff make it their job to see that definite standards in appearance, cleanliness, and orderliness are maintained by all member retailers, both in their equipment and personnel. The arrangement of merchandise in the stores follows a general plan that has been found particularly efficient. The store windows are trimmed regularly and attractively, while items offered at special sale are displayed simultaneously with the appearance of newspaper advertisements and the distribution of circulars announcing such sales.

"It may be of interest to know that, aside from the general supervision which we provide through our staff, many important problems of policy or procedure in connection with the management of the Royal Scarlet voluntary chain are decided by an executive advisory committee, consisting of twenty members of the group. The make-up of this committee is maintained on the principle that it must represent a cross-section of our membership. Among its members are large and small grocers, some located in cities, some in country districts, some who have always worked in or owned independent stores, and others who were successful as store managers for centrally owned chains and now have acquired a store of their own.

"This executive advisory committee meets whenever necessary to decide on questions that affect the interests or welfare of all members, or to consider other matters that are brought to its attention. Particularly valuable as a means of strengthening the cooperation between members is the general membership meeting held monthly. Attendance at these meetings has grown steadily, despite the fact that many of the members must travel up to 100 miles each way in order to attend, and at the last meeting we had over 80 per cent of all our stores represented.

"From the standpoint of sales building we have found it highly effective and profitable to publish a weekly bulletin of 'specials.' The folder announcing these specials may carry a list of from 50 to over 100 items. While this folder is the same for all stores, the name of the proprietor through which it is distributed is printed in large letters on its cover page so as to identify each independent dealer definitely as the owner of a Royal Scarlet store."

Mr. Williams then was asked for some figures that might indicate just how his company's entry into the voluntary chain field has affected its efficiency as distributor for some of the well-known or advertised food products. The figures he gives appear to remove any doubt that may have existed as to the effectiveness as a medium of distribution of a properly operated voluntary chain.

"If we felt free to do so," continued Mr. Williams, "we could show you a long list of products on which our sales have increased. However, there are some manufacturers who would prefer that we do not tell, while there are others who take justifiable pride in the way their goods have been selling through our Royal Scarlet stores.

"Take Comet rice, for example. Before we organized our voluntary chain we generally bought 40 to 50 cases at a time and our purchases of Comet rice would average about 400 cases annually. Now for over a year back we have been buying Comet rice in carload lots, and during 1932 our purchases will total over 3,000 cases, even though our chain is not yet three years old. Our purchases of Quaker Oats and the Pillsbury line of flour and cereal products have

Before going into the Royal Scarlet chain it looked like this.

It's the same building, but what a different store!

more than trebled, although even before we had the chain we were one of the large distributors for these manufacturers.

"There is perhaps no better example of what organized retail selling, such as the Royal Scarlet voluntary chain exemplifies, can do than the record that we have made with some comparatively new products. For instance, we have handled the products sold and advertised under the College Inn brand practically ever since they were placed on the market. Formerly we thought we were doing well when we ordered in 100-case lots. Today we order some single items of this line in carload lots of 1,000 cases and find it necessary to carry large surplus stocks whenever the committee decides to 'run a special' on one of the College Inn items; otherwise we might be caught short and be unable to supply the demand.

"And our experience with the new glass-bottle package of Log Cabin syrup is almost unprecedented. When Log Cabin syrup came packed only in the well-known cabin-shaped container we never bought over 100 cases of any one size at a time. When the manufacturer brought out the new glass package it appealed to us immediately from a merchandising standpoint, so we decided to feature it as a weekly special in combination with a 10-oz. package of pancake flour. Our first order was for 1,000 cases of the glass-bottle package. These were cleaned out in record time, and we immediately reordered and we are still finding it difficult to keep a stock. Meanwhile the sale of the regular cabin-shaped tins seems to be but little, if any, affected."

What of Advertised Brands?

There has been much discussion as to the effect of the voluntary chain method of distribution upon the sale of nationally advertised products. Some voluntary chains are notorious for their policy of pushing their own brands for the purpose of eliminating partially, or even entirely, the handling of nationally advertised brands. The firm which Mr. Williams directs has for over a half century marketed many products under its own "Royal Scarlet" label. The brand is very favorably known, particularly in the territory where the Royal Scarlet voluntary chain operates. The company could have readily concentrated greater effort upon building sales of the stores completely around their own already well-established brand. That this was not done in indicative of the policy which the company has always maintained: namely, to act as distributor for those products that the public demands and to perform the functions of a wholesaler rather than those of a promoter.

When asked as to how the sale of advertised brands through the company has been affected by the steady growth of the Royal Scarlet chain, Mr. Williams replied: "The proportion of our sales of nationally advertised brands in relation to our total sales is today approximately the same as it was before the chain was started. If anything, the nationally advertised products are getting a somewhat larger slice, and they account for 35 per cent of our total business."

This Should Interest Every Manufacturer

Mr. Williams was asked whether he would be willing to make some suggestions that would be interesting and valuable to manufacturers of food products who are anxious to preserve their independence but who have been unable to obtain adequate distribution for their products.

"So far," answered Mr. Williams, "nothing has occurred in our experience as sponsors of a voluntary chain to change our opinion that, when properly and honestly managed, a voluntary chain must be considered a dependable and extremely valuable distribution medium for food products made by independent manufacturers. The investigation which we made before finally launching the Royal Scarlet chain, however, convinced us also that there is a vast amount of difference between systems. In other words, there are chains and—chains.

"Some organizations perform in the fullest measure the functions for which they were created and give the manufacturer complete cooperation and 100-per cent value for any assistance he extends to them. In fact, I am glad to admit that the cooperation which we are receiving constantly from various manufacturers constitutes a definite factor in the successful operation of the Royal Scarlet voluntary chain.

"Unfortunately, there are in existence today some organizations that parade as voluntary chains but actually perform but few of the functions. Therefore, if I were a manufacturer and faced with the problem of building more stable and dependable distribution for my product I would, as a matter of course, look to the voluntary chains, but in making my selection I would do a great big lot of investigating. I would first attempt to separate the proverbial wheat from the chaff, ascertain which of these voluntaries is doing a real sales building job and which is merely used by some promoter as an easy means of making a living or gathering a fortune.

"I am convinced that in the voluntary chain system of distrubtion independent manufacturers can find the means by which to preserve their moral and financial independence.

"Through the voluntary chain the wide-awake independent wholesaler can surround himself with a group of retailers who, properly guided and aggressively managed, will assure him also of his independence.

"Finally, the independent retailer who is found worthy of membership in a well-managed group of voluntarily cooperating retailers may well feel that he has found the haven where organized sales effort, managerial talent, and merchandising support will be forthcoming with which he may definitely defend and preserve his independent existence as an individual and a merchant.

"As for the food industry as such, it appears logical that every effort should be expended to encourage the development of the voluntary chain system of distribution, but only if its progress can be so guarded and guided that the beneficial features of the system will be constantly strengthened, while the weak or unfavorable factors now present in some groups will be gradually eliminated."

Identity of owners is not lost.

Centrally Owned Chains Enter a New Era

CONTRIBUTED

IN THE food industry at least, independent business enterprise will be able to look back upon the year 1932 with considerable relief and perhaps some satisfaction, for it probably will prove to have marked the end of the first great period of expansion of centrally owned chain stores and the close of the period when chains were presumed to be threatening all independent business.

The conflict between chain stores and independent enterprise has continued in the food industry for over 70 years. Up to 1929, the casual observer was justified in contending that the chains were winning out and that independent manufacturers, wholesalers and retailers might be doomed to extinction. Since then the tide has turned. While prevailing economic conditions may have accelerated that turn of the tide, it appears certain that the turn had its beginning in 1929. Even a continuance of the boom conditions then existing probably would have caused nothing more than some further consolidations of existing chains and the launching of more chain-stock issues on the public, without thereby seriously decreasing the actual volume of business then transacted by independent concerns.

The influences which brought about the substantial halt in food-chain expansion came more through actions that originated within the chains themselves than from external sources. They have seemed irresistible, inevitable, and thus in the end must result in real and lasting benefit. There is reason to believe that the 70 years of steadily intensifying conflict between growing chains and harassed independents may prove to have resulted in a "draw," with neither victor nor vanquished. It is certain that as a direct outcome of it every manufacturer in the food industry will enjoy a more efficient and more economical system of distribution, and perhaps a more uniform profit from operations.

Chain-store selling originated in the food industry in 1859 when George H. Hartford opened several stores in lower New York under the name the Great Atlantic & Pacific Tea Co. It required the threescore years and ten that followed for the commercial progeny of that idea to reach its greatest expansion, and in 1929, according to the U. S. Census of Distribution, there were in existence 7,083 different chain-store systems which had under their control 158,000 retail stores. However, chain stores grew at the fastest and most threatening rate during the decade following the end of the World War.

The rate of growth of the chain-store system of selling is particularly well illustrated by the progress of the Great Atlantic & Pacific Tea Co. In 1910 it had only 372 stores. That number was multiplied tenfold during the next eight years, and at the beginning of 1919 the company had nearly 3,800 stores in operation. Then began the rapid expansion which carried the number of stores to 15,737 early in 1931—the greatest total ever acknowledged by this company.

In the first chain-store advertisement of which there is a record two particular advantages were claimed for this then new system. It was pointed out that: Buying for several stores at one time would make it possible to buy in larger quantities and thus obtain lower prices; through the elimination of intermediary agents, wherever possible, the profits ordinarily earned by such middlemen would be eliminated and thus lower selling prices could be offered to the consumer.

These two claims are advanced continually even today as the chief advantages of chain-store distribution. However, the developments of the last few years have substantially reduced the actual differences in lower cost of goods and lower operating costs, which originally gave the chain-store system valuable competitive advantages over the independent operator.

Arousing Antagonism

It is probable that if the chains as a class had capitalized their advantages only in the most constructive manner their progress might yet have continued without interference or interruption for some years to come. Instead many of the chains engaged in practices which aroused antagonism, bred enmities, price wars, and other conflicts, causing unfavorable reactions not only within the ranks of competing independent business but with the consuming public as well. Ill-will, thus created, set in motion many opposing forces which continued to receive stimulation while chain systems were expanding. These eventually accumulated sufficient strength to serve as important factors in arresting what appears to be limitless opportunity.

One of the offenses which chain stores have committed persistently is the selling of many items at prices less than independent competitors could until recently afford, or often at prices that were actually less than those that their independent competitor had to pay for them. The resentment caused by this policy had repercussions in all branches of the food industry.

Manufacturers who still obtained the bulk of their sales through independent wholesalers capitalized the fact that chains were not getting a chance to cut the prices on their goods. Other manufacturers who obtained wide distribution of their goods were found perfectly willing to handle orders from chain systems, because they were generally for considerably larger quantities than those placed by the average wholesaler, and because most of the chain-store companies paid their bills promptly.

Some food manufacturers found themselves hard pressed. On the one side they had to consider those chains that had already proved themselves to be large and desirable customers. On the other side stood the wholesalers who still represented a valuable volume of business and were clamoring for a declaration of policy. Some extremists among the wholesalers even demanded that manufacturers should not sell to chain systems at all. Few manufacturers could agree to this, because they themselves had serious doubt as to who would finally win the battle between chain and independent, and they needed distribution if they expected to stay in business.

Due to this unwillingness of important manufacturers to take sides and because chain stores were steadily growing in number, the anti-chain army, recruited chiefly among independents, their clerks, relatives and friends, also grew by leaps and bounds. When these "antis" found that their efforts to intimidate manufacturers and to divert the flow of goods were of no avail, they decided to try their hand at building legal obstructions in the path of the chains. Thus the hysteria prevailing among independent business men was carried into legislative halls.

Under the leadership of individual

independents, their organizations and vote-hungry politicians, many attempts have been made to restrict the freedom of chains or even to pass legislative measures that would practically put them out of business. Newspapers, circulars, radio broadcasting and every available means of publicity has been employed to spread anti-chain store propaganda and to arouse public sentiment against them. The majority of these attempts found expression in proposals to tax or license chain stores, through which the advantages which they were presumed to enjoy could be offset, so that competitively they would be more nearly on the same level with independents. The magnitude of these attempts can be measured by the fact that since 1927 nearly three hundred bills have been introduced in the various legislatures, each having for its purpose the obstruction of chain-store development. In addition, a number of cities attempted to pass anti-chain store or licensing ordinances.

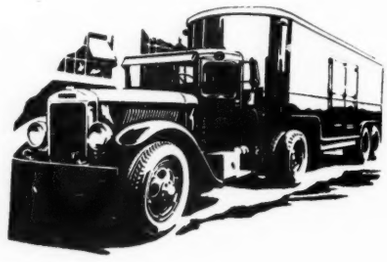
Hostile Legislation

While most of these efforts were unsuccessful, the isolated instances where special anti-chain legislation has passed test in court will be found to have had a far-reaching effect upon the future development of chain-store systems. One of the most drastic measures, that adopted by the State of Indiana, has been sustained by the U. S. Supreme Court. This law provides for a graduated tax per store, the rate of tax for each store increasing with the number of stores under single control. Of the municipal ordinances, at least one, that of Portland, Ore., has remained in effect, while the ordinance enacted by the city of St. Louis and several smaller cities are being fought vigorously by the chain interests and have not yet emerged from litigation. It has been predicted that unless the recent efforts by chain-store interests to gain public sympathy and support have fallen on exceptionally fertile ground, the legislative season of 1933, when 44 state legislatures meet, will produce another flock of proposed anti-chain-store measures.

Singularly, during the many years while chain stores were the subject of criticism and public or private attack, only one serious attempt was made by a disinterested agency to appraise the importance or to measure the value of chain stores as an economic force. The one exception is the investigation of chain stores ordered by the U. S. Senate (70th Congress, Resolution No. 224) and made under the direction of the Federal Trade Commission.

In its reports already issued the Federal Trade Commission indicates that chain stores have not been found to use magic or any mysterious methods, nor have they been found guilty of any infractions of the law. It appears that the policies and methods which chain-store systems employ in the immediate conduct of their business are substantially at the disposal of any independent merchant or business organization. The discovery of these facts through a governmental commission has served to clarify many misunderstandings that existed up to then. However, students of business and many manufacturers and wholesalers who found themselves in competition with chains, had recognized these facts for some time and had proceeded to adjust their business policies to meet chain competition, with the result that one of the several types of voluntary chains has generally appealed as the most logical and practical method with which to establish a more permanent foundation for future business. That is the reason why during recent years, while centrally owned chains were still expanding, independent manufacturers and wholesalers in increasing numbers have become active in the organization and operation of voluntary chains.

Centrally owned chains reached their maximum expansion approximately at the end of 1929. Since then few of these have added new units. A number of the important companies have been engaged in a systematic reduction in the number of units. Some found a merger the only means of self-preservation, while others have disintegrated.



Some drastic changes have taken place in the make-up of two of the nationally known chains. The Kroger Grocery & Baking Co., second largest food chain in the country, had 3,749 stores in 1927 and in that year earned $1,112 per store. It added 1,800-odd stores in the following two years, and at the end of 1929 was credited with 5,575 stores in operation, but during 1929 earnings averaged only $729 per store. Since then Kroger has been eliminating unprofitable units in considerable numbers, and at the end of September, 1932, had only 4,786 stores in operation.

Safeway Stores, Inc., had built up a chain of 4,080 stores through direct expansion and mergers, the largest of which involved acquisition of the 1,300-store McMarr chain. During the seven months ending May, 1932, this company eliminated over 500 of its stores, and at last reports this process was continuing.

These two examples are quoted to indicate what has been taking place to a greater or lesser degree within the organization of many well-known chain-store systems. In substance it means that many chains in the food field expanded beyond the limits of practical, economical, or even profitable operation. The decline of prices which continued for two years practically without cessation added to their problems. It cut deeply into their dollar volume of sales and reduced their margin of net income. The drastic price decline of the first six months of 1932, particularly, increased the seriousness of the situation. Their overhead expenses, rents, and general set-up were based on sales at high prices and good profits. Had general conditions continued on that basis these chains would have had an opportunity to consolidate their position on the wide front that had been established through excessively rapid expansion. Under prevailing conditions the deliberate contraction of operations to a smalled number of units has become the accepted procedure for building greater security. This process of concentration on a smaller front may be expected to continue while price levels remain at their present low, and probably will not be checked until prices are found to have definitely turned upward.

Voluntary Chains Increase

Paralleling this process in the field of centrally owned chains; the so-called voluntary chains have enjoyed a period of unequaled expansion. According to a survey made by the American Institute of Food Distribution, the number of such organizations increased by 25 per cent during the two years ending May, 1932, while the number of retail stores represented by those organizations increased by over 30 per cent in the same period. There are today over 700 such organizations functioning, and they supervise more than 83,000 retail stores.

Voluntary chains, through their headquarters organizations, buy a considerable portion of their food products on the same basis and at the same prices as do centrally owned chains. Many of them provide to their independent members a sales-building service that equals and in some instances is superior to the selling efforts of competing centrally owned chains. The majority of them succeed in improving the business methods of their members to a point where they operate at a profit and keep the financial and physical status of their business in sound condition.

Thus it is evident that as the result of developments which have occurred chiefly during the last three years the centrally owned chains have been deprived of most of the important advantages formerly enjoyed by them in every important department of their operations. The two basic advantages

which were claimed in the first chain-store advertisement have been definitely reduced to a small margin. Through the agency of the more formal voluntary chain and through the steadily increasing practice of group buying the independents have succeeded in bringing down the average cost of merchandise to a level that is either equal to or but slightly above that of centrally owned chains.

The advantage of lower costs through the elimination of intermediate agencies has been reduced to the vanishing point because even the largest chains cannot eliminate many of the functions that are indispensable in the distribution of merchandise. Independent agencies have reduced their operating costs and have so improved the efficiency of their organizations that the percentage which they add to the cost of goods is little if any more than what the centrally owned chains must add as their costs for performing the same service.

Advantages which centrally owned chains formerly enjoyed in the ability to plan special sales, advertise, prosecute intensive sales-building campaigns have been substantially offset because extensive and well-planned systems of organized selling are used in steadily increasing measure by their independent competitors. These have been particularly successful where the cooperation of manufacturers was made available.

Finally, centrally owned chains will be obliged in their future operations to consider the effects and added costs which they may have to carry if the widespread tendency to impose special taxes or license fees should result in legal enforcement of such measures, while their independent competitors would not be obliged to carry such costs.

A careful study of these several factors demanding consideration in any appraisal of the present status and future outlook of the centrally owned chain-store system justifies concluding that:

1. The system of distribution commonly referred to as "chain stores" has completed its first cycle of expansion.

2. Their number will not materially increase for some years.

3. The individual units of these chains in increasing numbers will become food stores wherein a large variety of foods, meats, vegetables and household necessities may be purchased.

4. The practice of chain stores in using price as their competitive weapon will gradually lessen and they will strive to compete on a quality and service basis.

5. Voluntary chains will continue to grow, provided manufacturers will take an active interest in refining the voluntary chain system so as to eliminate waste which is now present in many such organizations, and make them the most efficient agency for food distribution.

6. Independent enterprise in the food industry has today a better opportunity than at any time in 20 years, and if full advantage is taken of that opportunity, the chain store need not again be considered a menace to individual business enterprise.

7. Food manufacturers have in 1933 an almost unprecedented opportunity to realign their distributing outlets so as to obtain greatest diversity of markets with resulting greater stability in the market absorption of their product.

Appraising Technocracy

By THE EDITOR

Animated discussions in many walks of life have led many to believe Technocracy is something new. *Industrial Engineering* magazine used the term in 1919. Most of the ideas which Technocracy publicizes have been printed in books by such well-known authors as Veblen, who has been dead for years.

NO SUBJECT has been the object of more alarm and buncombe than that research into energy consumption and production of goods and commodities called by the curious name "Technocracy," now being conducted at Columbia University. After reading all that is available pertaining to the subject and listening to Prof. Walter Rautenstrauch, who has given quasi-sponsorship to the research, we find little to substantiate the dire preliminary predictions of Howard Scott and other more or less responsible spokesmen who suggest or predict a complete collapse of human affairs in eighteen months.

Not devoid of scientific and engineering training ourselves, nor wholly lacking in vision and foresight, we cannot subscribe to the conclusions ascribed to technocratic speculations. If we had the slightest notion, for example, that Technocracy could enable us to provide the equivalent of a $20,000 income by working only four hours a day, we would be unqualifiedly in its favor, for we have many hobbies we should like to ride.

Depression has afforded Technocracy the jittery audience that responds avidly to prophecies of gloom. If Technocracy possessed the wisdom ascribed to it, a constructive program would be forthcoming; yet that is disavowed. Instead of explaining its partial conclusions, Technocracy coins a new language and, as far as we know, Howard Scott, director of the survey, has never directly answered important serious questions other than by referring the inquirer to Huxley, to Clerk-Maxwell, and other dead authorities, or by giving other evasive answers involving the use of "energy-determinants," "decision arrivation," or "the next most probable energy state."

Of one thing we are certain: The engineer is not qualified to manage the world, as the technocrats seem to believe will be necessary. Engineering as a profession lacks that sense of direction or philosophical purpose needed for the guidance of world affairs, a quality which seems to be provided only by statesmen of the better type. America is devoid of men of that brand of statesmanship.

To understand this depression and its causes one must be more than an engineer or a student of energy utilization; more than an economist. It requires also the historical and philosophical approach and, beyond that, something that we shall term spiritual understanding or wisdom. Any lesser or more limited approach results either in a lopsided comprehension like Technocracy or complete bewilderment such as we see on every side today.

After months of contemplation of the problems proposed by Technocracy it becomes apparent that American leadership is suffering grievously from several decades of undereducation in liberal arts and the humanities, and from overeducation in the physical sciences. Our technicians and industrialists lack the directive benefit of a liberal education. Engineering affords a means to a physical end but does not provide the purpose for that end; a broader concept, a real philosophy is needed for that.

Technocracy, as created by engineers, can never provide the program of purposive social implications or readjustments which it believes it foresees to be needed. As a fact-finding agency—an engineering research organization—it merits our admiration for its very courage in tackling so vast a field as an energy survey of the North American continent. But life is too labile, too fluid, to permit its organization on the precision basis of engineering.

If Technocracy teaches us anything it is the need for a philosophy of life, the need for more character and honesty and ideals; the need for greater training in liberal education; but having dramatically pointed out that need, Technocracy cannot be expected to satisfy it.

The price-profit system which it abhors is satisfactory. It is we ourselves who are lacking. The economic world will *not* collapse on July 1, 1934.

It is not surprising to learn that many of the official and unofficial spokesmen for Technocracy have been suppressed, disavowed, or even dismissed from the Technocracy staff.

Do Manufacturers Render a Service

By Carrying Spot Stocks?

Many Think "Yes"

By JOHN H. FREDERICK
Assistant Professor of Commerce and Transportation
University of Pennsylvania

"Manufacturers' Spot Stocks—Misuse of Common Sense in Distribution," by Mr. Frederick, *Food Industries*, August, 1932, pp. 272-3, gave the wholesale grocer's side of the spot-stock question and stirred up considerable discussion among food manufacturers who carry spot stocks. Questions submitted to 75 leading food producers reveal that some regard carrying of spot stocks as an expensive—however necessary—service. Others count the practice an economy. Still others have different reasons for carrying spot stocks.

WHOLESALE grocers who strenuously object to food manufacturers' carrying spot stocks of their merchandise in public or private warehouses in various marketing centers feel that this practice constitutes undesirable competition and promotes price merchandising by fostering the growth of small wholesalers and jobbers who take advantage of such warehoused stocks to obtain the quick turnover which their limited capital necessitates. These large wholesalers also feel that when the manufacturers assume the storage function to such a degree they are reducing the fundamental functions of wholesale distributors in an undesirable fashion.

In letters received from several manufacturers of products handled by wholesale grocers surprise is expressed at the attitude shown toward spot stocks. The following quotation from one of these letters is typical:

> Contrary to the opinion advanced by a number of the wholesale grocers, it has been our experience that the carrying of local warehouse stocks of our merchandise was appreciated by the rank and file of the buyers as a definite convenience to themselves. It never came to our knowledge before that any of our buyers objected to this sort of service. As a matter of fact, we would prefer not to carry warehouse stocks. It's an expensive policy, at best, but today has more or less taken on the aspect of being a necessary evil.

From the letters received, it appeared that there was a decided lack of unanimity on the question of spot stocks. On the one hand are some of the leading wholesale grocers definitely opposed to manufacturers' spot stocks, while on the other hand are prominent manufacturers who state that they have never heard of this objection on the part of the wholesalers until it was brought to their attention. In order to get the opinion of a number of manufacturers, the following questions were asked of 75 of the leading producers of products handled by wholesale grocers:

1. Have you ever encountered any sentiment on the part of wholesale grocers to the effect that the carrying of spot stocks in public or private warehouses by manufacturers was undesirable, since it increased competition and promoted price merchandising by fostering the growth of small wholesalers?

2. Do you believe that a continuation of the practice of carrying local stocks will eventually contribute to the elimination of the wholesale grocer and add to the expense of distribution which must be borne by the manufacturer?

Fifty-four of these manufacturers replied to the questions. By far the greater number—47, to be exact—stated that they had never received any complaint from wholesale grocers that the carrying of spot stocks was undesirable, but that, on the other hand, they believed such stocks gave wholesalers a service which they appreciated. These manufacturers also felt that there is no reason why a continuation of the practice of carrying spot stocks should eventually eliminate the wholesaler, since the gap is entirely too wide between the carrying of a spot stock in a public warehouse and the functioning of an organization competent to handle distribution to the retail trade to permit of its being bridged without great difficulty.

Seven manufacturers reported that they had encountered a number of wholesalers who considered the carrying of spot stocks an undesirable practice on account of its giving the smaller jobbers an opportunity to sell given merchandise on the same basis as the carload buyer. On this point one manufacturer had the following to say:

> Unfortunately, many manufacturers have used spot stocks in an effort to gain competitive advantage. Also, a great many wholesalers have not looked beyond the temporary advantage which these spot stocks seem to offer, and have encouraged the extension of their use. When a manufacturer attempts to take over part of the logical function of the distributor, he immediately adds an unnecessary expense to his cost of distribution, and weakens the position of the wholesaler.
>
> With certain exceptions, we believe that the most economical method of distribution for food manufacturers is through the wholesale distributor. When the manufacturer has established widespread spot stocks, the next step is direct sales to retailers and consumers. Moreover, we believe that the experience of food manufacturers to date has indicated that the spreading of warehouse stocks has materially decreased the size of orders received, and has added an undue amount of risk, labor and expense; and that no benefit has resulted to either the manufacturer, distributor, or the general public.

The letters from manufacturers who stated that the sentiment encountered by them had been exactly opposite to that indicated in the questionnaire revealed a number of interesting facts as to present trends in food products marketing. Manufacturers are strongly of the

opinion that they are rendering a distinct service to wholesalers by maintaining spot stocks. In fact, a number of manufacturers stated that it had been their experience that the wholesale buyers insisted that spot stocks be maintained from which withdrawals could be made in an emergency when wholesalers could not wait until local shipments had time to arrive. This insistence on the part of the wholesalers grows out of the policy which many of them have adopted of not reordering merchandise until they are entirely out of some items. This delay, combined with the slowness of less-than-carload shipments from manufacturers' plants, causes them to be out of some products for coniderable periods of time. By carrying warehouse stocks and having their products available on short notice, manufacturers are able to overcome this difficulty, which seems to represent con-

siderable value to the wholesaler and also to the manufacturer, as substitution of other products for those out of stock is thus avoided.

A number of manufacturers revealed that their purpose in carrying local warehouse stocks throughout the country is not solely for the accommodation of the wholesale grocers. There is an element of economy in such a practice, so far as their own operations are concerned. It is customary for such manufacturers to sell their trademarked brands on a delivered basis to destination and, because of the wide spread between the carload and less-than-carload freight rates, they find it feasible to move all of their merchandise by carload and store it locally. In addition, it would be extremely difficult for them to match distant competition if they were compelled to absorb less-than-carload rates and price their merchandise more or less in line with local competition.

Manufacturers admit that from their standpoint the ideal way would be to ship products directly in carload lots to each wholesale distributor or at least in pool cars to be divided between a group of distributors in a given market. Unfortunately, however, while many manufactures endeavor to adhere to his principle in so far as possible, neither they nor the buyers can forecast exactly how long a given stock will last. Inevitably some wholesalers run out before others and in such cases it is much more economical to have a spot stock to tide these buyers over until the next car arrives than to make direct shipments of less-than-carload quantities from the factory. The spot stocks act as a cushion for fill-in deliveries to the larger buyers between receipt of either straight or pool-car shipments.

One or two manufacturers make the point that under present conditions they are going slowly in catering to the large wholesale grocers except where they are assured of unimpeded distribution. What these manufacturers have in mind is that today the more important the wholesale grocer, the greater is his tendency to push private brands, so that the smaller wholesaler, with less prestige, may frequently be the manufacturers' best outlet. These manufacturers seem to feel that the present low price level and the difficulties that wholesalers are having in readjusting their expenses in line with their reduced dollar volume is making the so-called "substitution evil" the most acute problem with which producers of advertised goods have to contend. In comparison, it is felt that all other problems are today almost insignificant. When one considers this aspect of the situation it can be appreciated how reluctant a manufacturer may be to cater exclusively to the larger wholesale grocers. In other cases, it seems that the manufacturer is not satisfied with the selling effort made with respect to his products by his wholesalers, asserting that they have become mere order takers and not sales agencies for his goods. This frequently leads to direct selling by the manufacturer, with the maintenance of spot stocks as an important part of such a system.

Many manufacturers point out that large wholesalers have never objected to their spot stocks, since they make a carlot allowance for carlot buyers or a pool-car allowance for orders assembled for pool-car shipment, so that the larger buyers have an advantage over the smaller buyer. This allowance generally approximates the savings which accrue to them through the lowered costs in transporting carload quantities. Generally speaking, the allowance for buying in carlot or pool-car quantities is sufficient to offset any advantage that might be gained through buying in smaller quantities to give quicker turnover. When such a policy is pursued those wholesalers whose credit limits them to buying in small quantities have no price advantage and it therefore cannot produce any unfavorable reaction. Other manufacturers charge the same price for goods delivered from spot stocks as on goods shipped from the factory, but do require minimum purchases of goods from such stocks.

It seems that the whole matter from the manufacturers' standpoint is well summed up in the following letter from a manufacturer who carries spot stocks in nearly one hundred warehouses at practically every important distributing point in the country:

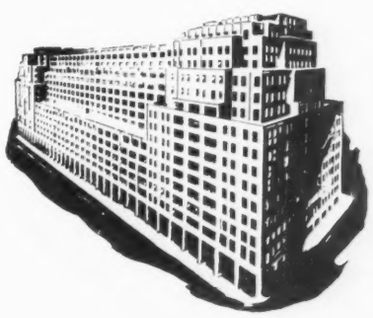
We do not agree that the carrying of spot stocks at distributing points increases competition or that it forces the growth of small wholesalers. There are very few wholesalers who today are in a position to buy a carload of our product. Frankly, from a manufacturers' standpoint we wish that we could discontinue the carrying of these warehoused stocks. We endeavor as much as possible to get the wholesaler to permit us either to ship him in carload lots or to permit us to include shipments to him in pool cars going to his city or to his vicinity. Our warehouse stocks are for the accommodation of the wholesaler.

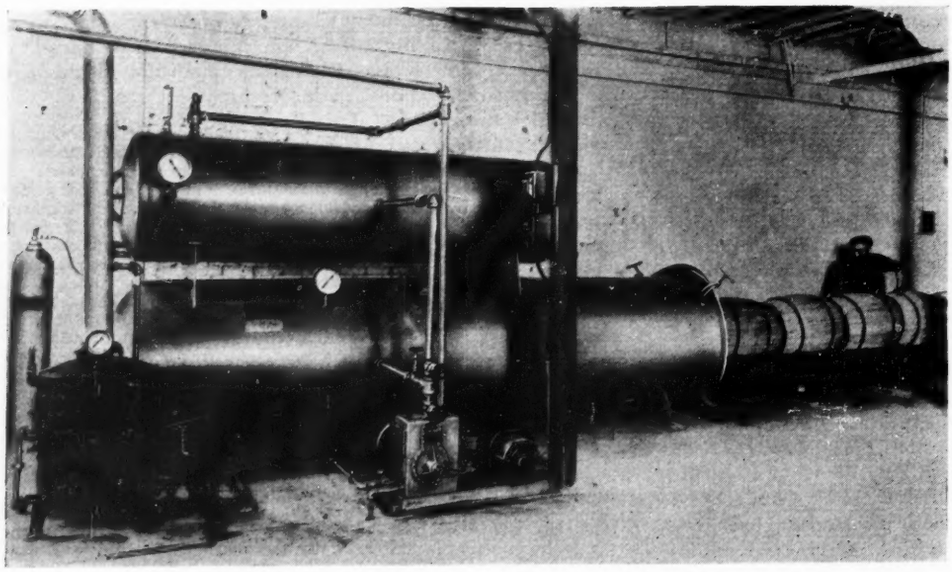
Were it not for the matter of competition we would endeavor to force the wholesaler to buy either in pool cars or in sufficiently large quantities at one time to justify our shipping a car to him. Unfortunately, competitors carry warehouse stocks at the more important distributing points. We are compelled to do the same or lose the business.

The carrying of local stocks by manufacturers, in our opinion, is but one of the problems that the wholesale grocer has to face today. The wholesale grocer is up against changing conditions, just the same as the manufacturer. If the wholesale grocer meets present conditions he will survive. If he endeavors to do business today on the same basis as he endeavored to do it 25 years ago, he is bound to drop by the wayside. Exactly the same thing applies to the manufacturer.

The carrying of warehouse stocks at various points throughout the country is for the benefit of the wholesale grocer. It is along the line of cooperation, as the carrying of these stocks makes it possible for him to give his retailers a greater variety than he could give them were he to depend solely on his own warehouse stocks. He can give them fresher goods and should be in a position to give them lower prices by allowing the manufacturer to have the investment rather than carrying the investment himself.

The consensus seems to be that neither the carrying of local spot stocks nor any other plan will eliminate the wholesale distributors. In principle their use is the cheapest and most nearly ideal plan of food products distribution. No distinction is drawn between the chain jobber and the independent jobber in this statement. It simply asserts the opinion that a regional wholesale warehouse (not owned by the manufacturer), buying each item in fair quantities and supplying the individual store with assortments of goods produced by many manufacturers, is inevitably better than each manufacturer attempting to distribute directly to retail outlets.





Fumigating pecan meats and peanuts in barrels at Barnhart Mercantile Co., St. Louis, Mo.

Looking at the Fine Points Of Vacuum Fumigation

By D. B. GOOCH
Springfield, Mo.

VACUUM fumigation, briefly, is fumigation under reduced pressure; in the absence of air. The operation is carried out by sealing in the fumigating chamber the materials to be treated and pumping out the air preliminary to admitting the fumigating gas. After the gas is admitted, it is allowed to remain in contact with the contents of the chamber for a period of one to two hours—usually an hour and a half. This is known as the fumigating or "soaking" period. At the end of the period, the gas is pumped out and air admitted into the fumigation chamber, which is then opened and unloaded. As the gas is applied without dilution by air, only a small amount is needed to give a 100 per cent kill. (In atmospheric fumigation the time of exposure is from 12 to 48 hours).

If this process is followed exactly, some of the fumigant will remain in or will cling to the surfaces of the fumigated articles. As most fumigants are quite volatile, they will soon dissipate into the air. But in some cases it is desirable to have all traces of the fumigant removed before the articles are taken out of the fumigating chamber. When this is the case, the fumigant is pumped off at the end of the fumigating period, air is admitted and in turn pumped off until all traces of the absorbed or entrapped fumigants are removed from the goods. This operation, known as "air-washing," usually is performed from one to four times.

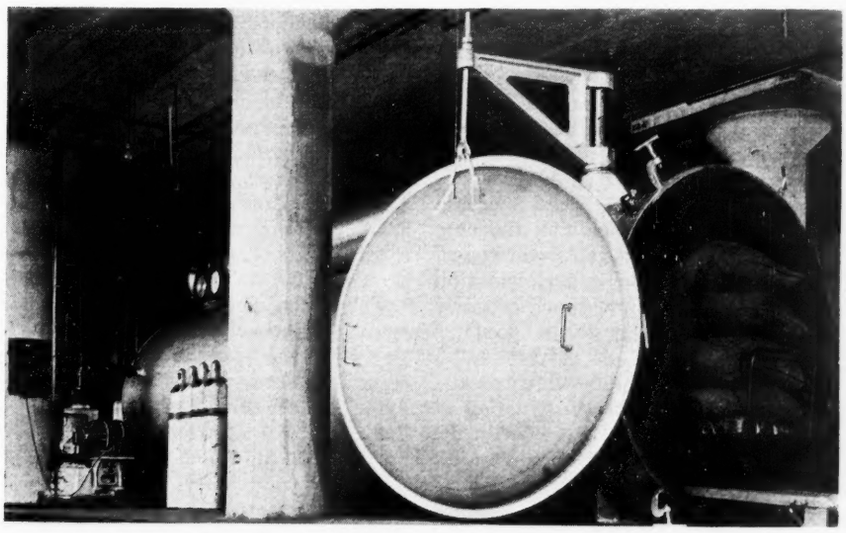
The usual total time required for vacuum fumigating a charge is from 2 to 3½ hours, 3 hours being about the average. It follows that three to four charges can be fumigated per nine-hour working day, and that vacuum fumigation can be used on a production basis. The temperature in the chamber has a direct influence on time of exposure and total time per charge.

Slow-moving insects are, as a general rule, more difficult to kill and more tenacious of life than the more active types. Below 70 deg. F. most insects tend to become comparatively inactive; hence if an attempt is made to kill them below this temperature, a longer exposure together with an increased dosage of the fumigant will be required. Therefore all fumigators, with the possible exception of those located in tropical countries, should be provided with means for maintaining the temperature inside the fumigator at a minimum of 70 deg. F. On the other hand, many materials such as candies, nut meats, and other foodstuffs may not be heated above 80 or 85 deg. F. without deterioration in quality; hence the heating elements should be carefully designed and provided with proper means for control. The heating elements, as a rule, consist of steam coils or of special electrical heating elements.

The chambers usually are built in the form of horizontal cylinders with a door at one or both ends, as required. The door should be properly balanced so that one man can open it with ease and should be fastened in such a manner that it can be quickly opened and closed, thus making for speed of operation. Also the door should be provided with a special gasket which will not only be quite durable but will provide a tight seal. The usual specifications covering a vacuum chamber call for a maximum drop in vacuum of not over ½ in. per hour. When the chamber is 9 or 10 ft. in diameter, the highest quality of workmanship is requisite, as any inequalities or uneven surfaces on the flanges of the door or the chamber

tend to induce leaks. Chambers over 5 ft. in diameter should be provided with a bottom platform to enable the operator to enter the chamber if necessary. And the platform should be perforated so that there will not be a "dead" pocket below it to harbor the fumigant. Such pocket would be hazardous if a poisonous or inflammable fumigant is in use.

Finally, the vacuum fumigating chamber should be furnished with vacuum gages, rigid supports and foundations, a vacuum breaker valve, gas inlet connection, vacuum connection, and last, but not least, should be amply strong to withstand the collapsing effect of the external air pressure when a vacuum has been created inside the fumigator. The vacuum gage should be hand-calibrated and the vacuum breaker valve within easy reach of the operator. The gas inlet and vacuum connections should be of ample cross-sectional area to insure speedy admission of the gas and to enable the fumigator to be evacuated in the shortest possible time.



Installation in Griswold, Walker, Bateman Co. warehouse provides for use of wheeled trucks.

The second item of a vacuum fumigating unit is the vacuum pump. It is the heart of the unit. It not only controls the length of the fumigating cycle but has a decided bearing on the results obtained. First, the size of the vacuum pump selected is the variable which determines the total duration of the fumigating cycle; the other factors are fixed and depend on the material being fumigated and on the fumigant for the loading and unloading time. The fumigating period, in a given fumigator handling a given material with a given fumigant, will be constant and require a definite period of time in each cycle. As the vacuum pump has to evacuate the fumigator from two to six or seven times (the number depending on the number of "air-washings" necessary) in each cycle, it is evident that in a cycle requiring two "air-washings" a pump requiring 20 minutes to evacuate the fumigator will lengthen the cycle 40 or 50 minutes as compared to a pump capable of obtaining the desired vacuum in 10 minutes. With a fumigator handling three charges per day, this is a difference of 2 to 2½ hours in the length of the working day. In general, it is desirable to select a pump capable of evacuating the fumigator in less than 15 minutes. However, the amount of money available also will have a bearing on the size of pump. In a large unit, a pump capable of doing the work in less than 10 minutes will cost considerably more than a pump requiring 20 or 30 minutes and will have a distinct bearing not only on the initial cost of the complete fumigating unit but also on the power consumption.

The next specification to be considered in selecting a pump is the amount of vacuum it will obtain. The pump should be capable of obtaining a dead-end vacuum of not less than 28½ in. of mercury as compared to 30 in. barometer and, preferably, should be able to obtain a 29-in. vacuum or, better still, a 29½-in. vacuum. The reason is the greater the vacuum obtained, the better will be the results. A greater vacuum means less fumigant as well as a shorter fumigation period. In a vacuum fumigator, it usually is difficult to get good results when using a vacuum of less than 27 in. of mercury, but there are exceptions to this rule. In addition to being able to obtain a high vacuum, the pump should be sturdy, light in weight, water-cooled, quiet in operation, and should have a high mechanical efficiency or, in other words, should have low horsepower requirements.

Now we come to the part of a fumigating unit that determines its effectiveness: variously called the gas vaporizer, gasifier, volatilizer, or accumulator. This piece of apparatus will vary with the fumigant used. There are a number of fumigants on the market; some are applicable to vacuum fumigation while others are not. Among those in common use for either atmospheric or vacuum fumigation, or, in some instances, both, are carbon bisulphide, mixtures of carbon bisulphide with carbon dioxide, hydrocyanic acid gas, cyanogen, Zyklon discoids, ethylene dichloride, ethylene dichloride mixed with carbon tetrachloride or carbon dioxide, ethylene oxide, ethylene oxide mixed with carbon dioxide (which may be purchased and mixed by the user or purchased already mixed in liquefied form in cylinders under the trade name "Guardite" or "Carboxide"), chloropicrin ("Larvacide"), together with others which are constantly being tried out.

The fumigant selected will determine the design of the volatilizer. If hydrocyanic acid gas is used, the volatilizer is merely a heat exchanger and may take one of several forms. One of the most common and satisfactory types consists of a cylindrical steel

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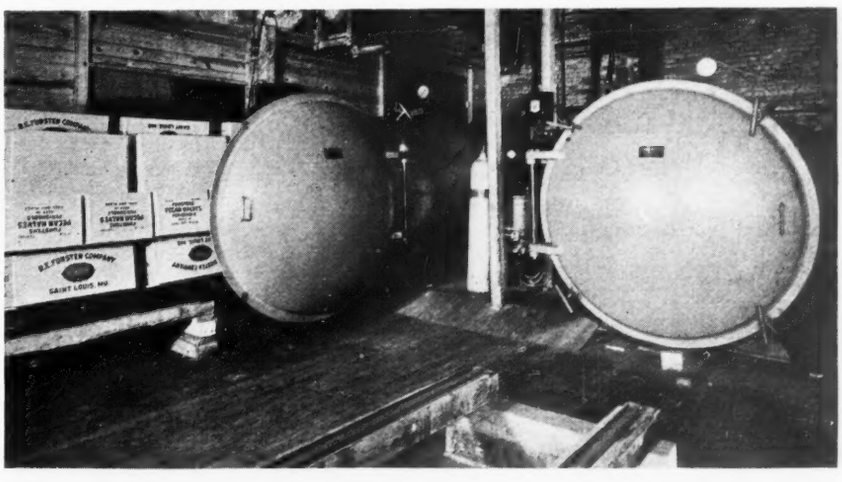
Doors of fumigating chambers must be closed so as to give an airtight seal.



vessel in which steam is generated by means of electric heating elements. Inside the volatilizer is a copper coil which is surrounded and heated by the steam. The fumigant is led through the copper coil and completely converted into a gaseous state by heat from the steam. It then enters the fumigator slightly above room temperature and is in the best state to secure maximum results. As purchased the fumigant is likely to be in liquefied form in gas cylinders or gas bottles, and on being released from the bottle is partly in the form of a gas and partly a spray. It is also at a low temperature, because of the effects of the expansion consequent to its being released from the high pressure in the gas cylinder to the partial vacuum in the fumigator.

Gas Generation Not Popular

In inaccessible localities and foreign countries where it is not economical or possible to purchase liquefied HCN, it is common practice to generate hydrocyanic acid gas in a special generating unit, using sodium cyanide and sulphuric acid as the raw materials. Very good results are obtained, but, on account of the extra labor involved, together with the fact that this generating unit has a rather high initial cost and is a somewhat complicated piece of apparatus, this method is no longer very popular in the United States.

A volatilizer for carbon bisulphide will be an entirely different piece of apparatus from a volatilizer designed to handle a carbon bisulphide-carbon dioxide mixture. (It is well, while on the subject, to state that carbon bisulphide by itself is no longer recommended for vacuum fumigation, on account of its extreme inflammability and the consequent likelihood of explosions. Static electricity, contact with a lighted cigar, or even hot steam pipes may cause a disastrous explosion. Therefore it should always be mixed with carbon dioxide in order to avoid this danger.)

In the past, good results have not always been obtained with binary fumigants, because allowance was not made for the physical characteristics of the different components. In the liquid form one component might be heavier than the other and tend to separate out in layers when compressed in gas cylinders. When this happened it was hardly possible to withdraw from the cylinder a mixture of proper proportions, and when vaporized one component was likely to be in the form of vapor and the other in the form of a gas. Again a mixture in proper proportions was difficult to obtain.

To overcome this difficulty in handling binary mixtures, primarily the ethylene oxide-carbon dioxide mixture, J. P. Devine Manufacturing Co., Inc., Mount Vernon, Ill., recently developed a volatilizer known as an "accumulator." Its function is to insure the users of this mixture that the gas will be delivered to the fumigating chamber in the proper proportions and at the correct temperature. With slight modifications it can be used with binary fumigants such as carbon bisulphide with carbon dioxide and also with such fumigants as hydrocyanic acid gas.

From the foregoing, the reader probably has gotten the idea that a vacuum fumigating unit that will function successfully is expensive. This, however, is not the case. I know of no other type of apparatus with an equivalent daily capacity that has anything like as low an initial cost as a vacuum fumigating unit.

The fabrication of a vacuum unit should never be intrusted to the ordinary fabricator or boiler shop. I know of an instance or two in which this was done in an effort to economize on the initial cost of the equipment, and in each case it proved to be a costly mistake. Either the apparatus was not properly designed or, if the design was workable, the fabricator knew so little about vacuum fumigation that the user had to spend considerable time and money on large-scale experimentation before the apparatus functioned properly and perfect fumigation was secured.

The rather detailed description I have given of the points which should be borne in mind in the construction of a fumigating unit deals mainly with the mechanical details of the apparatus, and, because of lack of space, does not cover all of these. The concern interested in vacuum fumigation should take its problem to a manufacturer specializing in this field. Experienced builders of vacuum fumigators can draw upon their experience in this highly specialized field and can not only be of assistance in selecting a fumigant that will completely kill the insects without harming the product being fumigated but can also suggest many little refinements in design and operation to save their customer money and to give higher efficiency and better operation. In addition to this, they will know exactly the size unit required for a given daily capacity, which is an important point.

I have mentioned that the initial cost of a fumigating unit is low—not only low but surprisingly low, considering its capacity. In a well-designed unit, obsolescence and depreciation will have to be charged to such a large quantity of materials that these charges become negligible. The life of a fumigating unit is so exceptionally low that the initial cost is written off the books before the unit even shows signs of wear. In the long run, the operating cost really governs the cost of vacuum fumigation. Including the cost of the fumigant, which will be less than one-tenth to one-twentieth of a cent per pound of material fumigated, together with the charges for labor, steam, power, depreciation and interest on the investment, the total operating cost in most cases is less than one-fifth of a cent per pound.

There is a case on record of a candy manufacturer whose annual losses on goods returned on account of insect infestation were in excess of $50,000. After installing a vacuum fumigator, these losses dropped to less than $200 the first year. When his loss of trade

Solid packed cases of dates are fully sterilized by vacuum fumigation in plant of W. H. Marvin Co., Urbana, Ohio.

is estimated and added to his previous known loss, it can readily be understood why this manufacturer is an enthusiastic supporter of vacuum fumigation.

In the last analysis, the thing to be considered in the installation of a vacuum fumigating unit is not what the initial cost is, nor what the operating cost will be (so long as it is within reason), but that the equipment manufacturer selling you the fumigator can give you an iron-clad guarantee that not a single egg, pupa, larva, or adult insect will be left alive in the material treated. The J. P. Devine Manufacturing Co., Inc., Mount Vernon, Ill., and the Vacufume Co., Los Angeles, Calif., have each had fifteen to twenty years of successful experience in building vacuum fumigators and each has a great number of installations in both this and foreign countries, operating on all kinds of materials and under a great variety of conditions. Also, the Guardite Corp., Chicago, Ill., has had much successful experience, and, as it is the one concern in the vacuum fumigation field which furnishes both the equipment and the fumigant, it is in a position to guarantee the result with the two when used together. This company goes so far as to insure against infestation goods which have been fumigated according to its standards and stored in fumigated warehouses. The policy is issued by one of the largest American insurance companies at a rate so low as to be almost negligible.

Fumigation Engineering Service, Hartford, Conn., is another concern in this field that not only specializes in the atmospheric fumigation of warehouses but is prepared to vacuum fumigate foodstuffs and other materials or to furnish vacuum fumigating units to meet its customers' requirements.

I can recommend any of these concerns to those interested in vacuum fumigation and wanting expert advice and services.

Now that we have a good picture of the essentials and methods of operation of a vacuum fumigating unit, let us consider the food materials which can be vacuum fumigated to advantage. The list is too long to be given here but it includes baled goods, packaged foodstuffs, candy, cocoa beans, dates, dried fruits and vegetables, figs, garbanzos, macaroni, spaghetti, nuts and nut meats, oatmeal, peanuts, raisins and rice. We find that some foods appeal more to a particular insect than to others, although some species have a catholic taste in matters of diet and seem to relish many different foods. This preference of insects for certain foods is of value in vacuum fumigation, as it enables the fumigator to know beforehand just what insects he will have to cope with and to select his fumigant and regulate his dosages accordingly.

Some rather remarkable and, to the layman, almost unbelievable results have been obtained in the vacuum fumigation of different products. One of the most common objections raised against the installation of a vacuum fumigating unit is, "We will not be able to fumigate our finished products, as these are wrapped in airtight cellophane packages." This is logical, as a processed-cellulose-wrapped package is airtight under ordinary conditions, but, nevertheless, it is possible to vacuum fumigate goods wrapped in such packages.

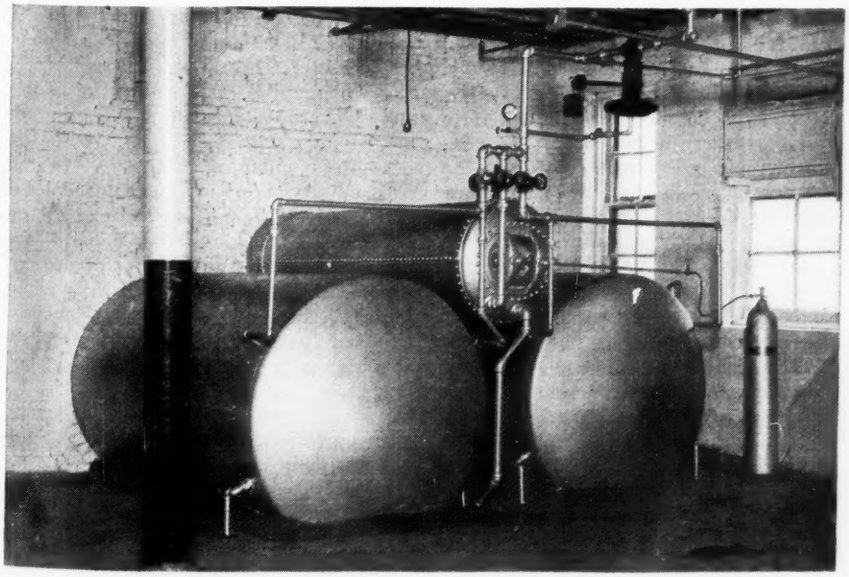
The package is not sealed with a glue, as most packages are, but by a solvent, such as a pyroxylin lacquer or other nitrocellulose solvent which is used to make the two surfaces adhere. Ordinarily no great effort is made to secure a complete seal. The wrapping is folded at the end of the package in the usual manner and the end of the fold moistened with the solvent and stuck in place. This makes a package which under ordinary conditions can be considered moisture-resisting and airtight, but in a vacuum fumigator this package is not under ordinary conditions. When the fumigator is evacuated, the difference between the pressure inside the package and the vacuum in the fumigator forces the air to escape through the tiny spaces between the folds at the end of the package. When the fumigant is admitted, the condition is reversed. The fumigant is forced into the package through these spaces and effective fumigation is secured. Incidentally, such a package which has been fumigated is effectively protected against reinfestation, for it is indeed rare that an insect effects entrance into it from the outside.

Tests Prove Effectiveness

Repeated tests and long experience have proved that baled goods, packaged goods such as cigars, candies, or nut meats in corrugated cardboard shipping containers, and even goods in tins with tightly screwed tops can be vacuum fumigated with ease. Recently a test thoroughly convinced a skeptical prospect as to the "impossible" results that can be obtained in a vacuum fumigating chamber. A block of pitted dates which apparently was a solid mass was drilled and a hole opened to the center by means of an auger. A bottle containing insects was inserted into the hole and the hole closed by solidly tamping the dates back into place. At the expiration of the fumigating cycle, the mass of dates was reopened and the insects were removed. They failed to show any signs of life even after incubation. These and many other tests, as well as routine employment of vacuum fumigation on a great number of products, have proved its efficacy beyond the shadow of any doubt.

Skepticism is sometimes expressed by those interested in vacuum fumigation when it is stated that delicate foodstuffs such as candies or nut meats can be processed and a 100-per cent kill of any active or dormant insect life effected without in any way injuring the taste, aroma, or color, and without leaving an undesirable residue of any kind. Repeated and long-continued diets composed strictly of fumigated foods on laboratory animals have failed to develop any perceptible ill effects, thus proving conclusively that this process is harmless.

Fumigant is made more effective by uniform mixing and heating in volatilizer before introduction to fumigation chambers.



Operating Motor Trucks

Coincident with the beginning of the new year, FOOD INDUSTRIES inaugurates a two-page spread devoted to the important phase of motor transportation in the food industries. Fundamental facts, consideration of which should result in a reduction of motor transportation expense and eventually in distribution costs, and important subjects related thereto will be discussed in these pages each month. In addition, illustrated feature articles on some important phase of motor transportation will be presented in these pages from month to month.

Companies represented by readers of FOOD INDUSTRIES own, in the aggregate, motor equipment costing tens of millions of dollars and approximately an equal amount to operate yearly. Hence the great importance of keeping up to date in regard

SUPPORT YOUR TRUCK OWNERS' ASSOCIATION

SUPPORT your local truck owners' association if you want to protect yourself against the flood of restrictive truck legislation that will be introduced at the various state legislatures convening in the immediate future. Owners of small and large fleets of motor trucks engaged in the varied work of all food industries undoubtedly will find themselves faced with the most discriminatory and restrictive truck legislation yet proposed. It has been stated on good authority that some of the proposed laws will seek to limit the gross weight, length, width, and height of trucks to such an extent that many of the medium- and heavy-duty trucks now operated by companies in the food industries will be driven off the roads because of their inability to conform to such restrictions.

Failing that, proposed restrictions on road speeds, increased cost of license fees and ton-mile taxes will increase the costs of operation to prohibitive figures. All transportation costs are reflected in the final selling prices of the commodities handled. Unless the entire increased operating costs can be passed along to the final consumer, companies in the food industries will have to absorb a portion of these increased costs. And herein lies the difficulty, for increased transportation operating costs, which form an important part of the total cost of doing business, make it more and more difficult to earn a profit.

In the beginning, motor vehicle license fees and taxes were levied to obtain funds to build and maintain highways. This was based on the economic theory that those who use the highways should pay for them. In states with large numbers of motor vehicles, this method of raising funds resulted in revenues far in excess of the appropriations for road construction and repair. In states with few motor vehicles and few improved roads, the funds so obtained were not sufficient to underwrite overambitious road-building programs.

Then came the gasoline tax, based on the economic theory that license fees did not make the users of the roads pay in proportion to their use and that the gasoline tax would accomplish this end. Eventually the gasoline tax spread to every state in the Union. While much can be said on the gasoline tax in theory, in practice most states left the previous scale of license fees in effect, with the result that the gasoline tax was an additional burden. This burden was especially heavy on the larger sizes of motor trucks because of the larger quantities of fuel consumed. Truck owners generally grumbled about the additional taxation, but did not demand its elimination because they felt willing to contribute even more than their share, provided the gasoline tax revenues went exclusively to the building and maintenance of highways.

Once a gasoline tax was levied, the various state legislatures discovered that a gasoline tax was an easy one to collect and, being in only cents per gallon, did not seem an undue burden to the general public. When, in recent years, state budgets could not be balanced in keeping with the increased costs of government, without further increases in taxes on real estate and incomes, many of the legislatures increased the gasoline taxes year by year until it will not be long before the combined state and federal tax on the gasoline will equal or exceed the price of the gasoline itself.

Furthermore, much if not all of the recent gasoline tax revenues are not used for highway construction or repair but for other general expenses of the state. Then, taking a leaf out of the state legislatures' book, along comes the federal government looking for an easy tax to levy and collect, and it too passes a gasoline tax superimposed on all state gasoline taxes and license fees.

As if all of the above taxation were not enough, now comes a certain part of the railroad industry claiming that the present plight of the railroads is due in the largest extent to the unfair competition of the motor truck and the motor bus, and demanding, therefore, that the motor truck and motor bus be further taxed, controlled, and restricted to eliminate the unfair competition that now allegedly exists.

It is, therefore, high time for truck owners generally and particularly those in the food industries, where the ratio of the cost of final distribution to the selling prices of the food commodities is high, to organize and make sure that the true facts concerning present motor-truck taxation are presented to the incoming legislatures in a sane, orderly, and convincing manner. While organization of truck owners nationally is not practicable, companies in the food industries may protect their rights by working through the existing truck owners' associations in those states in which the companies operate commercial vehicles. FOOD INDUSTRIES will be glad to furnish on request the names and addresses of such associations in the various states.

Those companies in the food industries which have been loath to take any active part in opposing recent motor-truck legislation on the ground that they hold considerable blocks of railroad stocks and bonds on which they would like to earn dividends must decide if this will be more or less advantageous than greatly increased transportation costs.

If they wish to keep motor-truck-transportation taxation within bounds, they should support the local truck owners' associations both morally and financially. These same companies cannot expect to escape the prohibitive taxation and restrictions proposed by sell-

to this enormous investment and of continually striving to find new and better, and consequently cheaper, methods to be applied in the diverse field of motor transportation.

To this service of our readers these pages are dedicated. There is almost unanimous agreement as to the results to be obtained, but many differences of opinion as to the manner or method of accomplishment. So if the readers of these pages do not always agree with the deductions drawn from the fundamental facts presented, their views are cordially solicited, with the hope that a fuller discussion of the problem will be of greater value to them. Readers with particular motor transportation problems are invited to acquaint us with such problems for discussion in these pages or by correspondence.

ing their own vehicles and having the work done by outside transportation companies. Proposed restrictions for inter- and intra-state trucks for hire are even more stringent than for privately owned trucks and include, in addition to the taxes already mentioned, mileage taxes, ton-mile taxes, gross revenue taxes, and certificates of necessity and convenience.

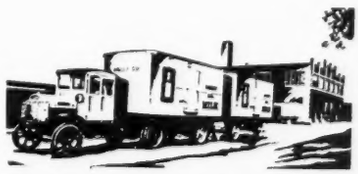
Cutting Milk Delivery Costs

Transportation engineers outside of the milk industry who have studied the use of motor vehicles for retail milk deliveries in zones in which it is physically possible for horses to be used point out that the higher cost of motors is due to improper application of the vehicles. Whenever a motor vehicle is substituted for a horse wagon, vehicle for vehicle, with approximately the same amount of work done within the limits of the working day, the unit cost of delivery by motor vehicle cannot help but be greater than with the horse wagon. This is because the conventional motor vehicle costs from two to three times that of the horse wagon.

These same engineers point out that lower motor-vehicle unit costs in horse-wagon zones must come in one of two solutions to the problem. These are the development of a motor vehicle that will cost no more to buy and to operate than a horse wagon and with which an equal number of points can be delivered within the limits of the working day. As the present-day retail route truck is not in this category, this solution of the problem must await the development and acceptance by the dairy industry of a motor vehicle which can carry as much as a horse wagon and can be bought and operated at equal expense.

The other solution is to make the existing conventional straight-frame truck or dropped-frame vehicle do sufficiently more work in the same time as required by the horse wagon to more than offset the difference in the first cost and operating expense.

Assuming that the driver of the horse wagon is at present working to the limit of his physical ability, substituting a motor vehicle for a horse wagon within the wagon zone will not enable him to do more work. Accordingly, it is pointed out, the only way to get more work done by the motor vehicle is to put more than one man on the truck. However, many experienced retail milk-route delivery men assert that two men cannot be used on one route vehicle because of the use of the route book, assignment of customers, collection of accounts, and division of collection commissions and point bonuses. To this contention the transportation engineers point out that many other industries, notably the large department stores, have for years laid out their most congested routes for two- and even three-man operation. On such routes the amount of work done by the truck is not determined by how fast or how many miles the truck runs but by the length of the working day and the average time of delivery or time that the man or men are away from the truck in completing the delivery transaction.



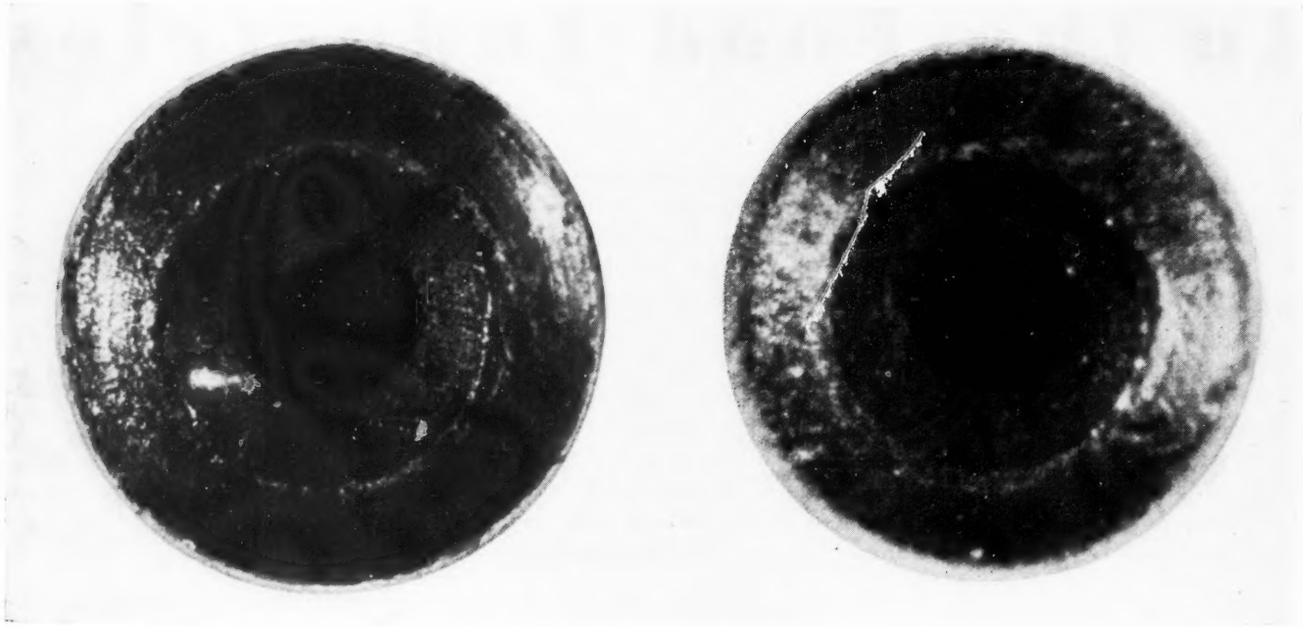
MOTOR TRUCK LAWS INVOLVE BRAKE TESTS

SPEEDING of road traffic in recent years has placed extra heavy responsibility on the brakes of medium and heavy commercial vehicles as used in varied transportation work in the food industries. From the user's viewpoint the problem is twofold. First, to make certain that the vehicles as purchased from the manufacturer are equipped with adequate brakes (plural). Second, that some proper maintenance system be set up to make certain that they are kept in proper condition and are in reality at all times "adequate brakes."

The use of the word "plural" after brakes in the preceding paragraph was made to bring out the legal interpretation that "brakes" means two separate sets of brakes, commonly known as the foot or service brake and the hand or emergency brake. As a means of accident prevention some authorities have sought to set up specific stopping distances at certain vehicle speeds to fix a definite meaning for adequate brakes and to require that either set of brakes, to be termed "adequate," shall be able to stop the vehicle within the prescribed distance at a speed equivalent to 20 miles per hour.

The use of the decelerometers for measuring stopping distances has progressed rapidly during the past year in replacing the guesswork of the speedometer and tape-measure method. As many police authorities and other law-enforcing agencies are using the decelerometer for testing the brakes of vehicles involved in accidents resulting in personal injuries, the progressive fleet operator will also furnish his maintenance force with similar instruments so that it may use the same yardstick.

The executive responsible for any large fleet of motor vehicles in food industries work may well ask his maintenance superintendent the pertinent question of what he has done and what he is doing about this important subject of adequate brakes.



Top view of two light-duty carburetor jets, magnified 25 diameters. The orifice of the jet on the left has worn and the other has become smaller. Both jets have been in service for about 30,000 miles and both were originally the same size, their flow limit being 165 to 169 c.c. per minute. But the worn jet has a flow rate of 172 c.c. and the other a flow rate of 157 c.c.

Delivery Costs Are Too High; Exhaust Gas Tests Will Prove It

By A. C. SCHMID
Combustion Engineer
Newark, N. J.

Many motor fleet operators are learning that engines which apparently are in perfect condition may actually be 15 to 20 per cent, or more, below their maximum efficiency. In this article the author tells why this condition exists and outlines a procedure that will eliminate it and reduce distribution costs. He also reveals some startling facts about carburetor jets. Incidentally, a properly tuned motor will not discharge the obnoxious exhaust gases that so often spoil truck loads of food products.

FEW fleet owners, it seems, realize that truck operations can be put on an economical basis by the simple process of periodical inspection. Yet the savings effected by such a procedure have sometimes been so large as to be unbelievable were they not substantiated by careful cost records.

To bring about this unforeseen increase in efficiency, scientific equipment must be employed. The "pulse-feeling" methods of the mechanic are too inaccurate and misleading. Improvement cannot be made until trouble is detected, and one of the surest ways to reveal the "ailments" of a motor that apparently is in first class condition is to analyze the exhaust gases by chemical or electrical means. Improper combustion of the air-fuel mixture is the telltale mark of motor faults, and it is the condition that the exhaust-gas analysis reveals.

While formerly too complicated to be practicable, this analysis has been made easy by equipment developed within the last year or so. A brief description of the operation of these instruments will suffice to bear out its accuracy. One type compares the thermal conductivity of the exhaust gas with that of air, the scale reading in pounds of air per pound of gasoline supplied the motor. Another burns the combustibles in the exhaust gas by premixing the sample with air and then circulating it over a glowing platinum wire. The rise in temperature and increase in resistance of this wire is then translated into the per cent efficiency of combustion, the instrument indicating it directly. A large dairy recently effected an indicated gasoline saving of more than 20 per cent with one of these analyzers, while a meat-packing company cut motor fuel costs by 25 per cent with the other.

Ordinarily, motor troubles affecting power and efficiency can be traced to one or a combination of three causes: poor compression, faulty ignition and poor carburetion. Of these, the latter two are guilty of the majority of troubles, with ignition the heaviest violator. In fact, approximately 70 per cent of power and mileage complaints have been traced to faulty ignition. Obviously, then, the vehicles shown by the analyzer to be below par in efficiency

should be checked for poor compression, then for faulty ignition, and lastly for improper carburetion (see Fig. 1). Here again, special testing apparatus must be employed to get anything approaching accurate results. An exhaust-gas analysis after each step of the tune-up procedure will indicate whether all the trouble has been eliminated and whether it is necessary to investigate further.

Poor compression, while not as common as faulty ignition, is the more serious, since it is more difficult to remedy. The trouble may lie either in worn rings and pistons, scored cylinders, improperly seating valves, or poor oil seal. In checking the compression a reading should be taken on each cylinder after the valve tappets have been adjusted to the proper clearance, this adjustment being made while the engine is hot. Insufficient compression, of course, causes loss in power through leakage of the gases of combusion and through the inability of the piston to draw in a full charge of fuel and air because of poor suction.

Inspection of the ignition system should cover spark plugs, distributor contacts, distributor condenser, coil, cables and timing. Since the pressure in the cylinder tends to reduce the bad carburetor adjustment, and he "plays" with the adjustment before checking compression and ignition. Secondly, he adjusts the carburetor by leaning the mixture until the motor loses power and then richening it until original power is restored. This is poor practice, as the mere fact that a motor is developing sufficient power is no indication that it is operating as economically as possible. The air-fuel ratio may be very low, and this usually is the case, since there generally is a tendency to overrichen the mixture to obtain maximum power.

Since most maintenance men do go astray in the adjustment of the carburetor, proper understanding of the function, troubles and effects of this part of the motor is essential to efficient fleet operation. The purpose of the carburetor is to atomize the fuel and mix it in the right proportion with air. To accomplish this, the gasoline is fed into the carburetor through one or more jets, over the orifice of which the air supply is drawn at relatively high velocity by suction created in the cylinders through the pumping action of the pistons. A venturi tube steps up the velocity of the air as it passes the orifice, thereby securing more complete atomization of the gasoline, and the suction draws the air-fuel mixture into the cylinders.

The heart of the carburetor and the controlling element in the air-fuel mixture ratio at average running speed is the main jet. And on the basis of the type of main jet used, carburetors are classified as fixed, semi-adjustable and fully adjustable. Each of these has its advantages and disadvantages. With the fully adjustable type, a change in setting may be made without removing or replacing the jet. This saves considerable time, particularly if the fleet is large and the settings are changed for winter and summer operation, which now seems to be a universal practice, even though some oil companies supply a summer and winter gasoline. On the other hand, the original setting of this type of carburetor is subject to change due to vibration of the motor. Moreover, drivers are inclined to change the adjustment when their vehicles misbehave on the road. It is obvious, therefore, that the adjustable type will require frequent checking.

The fixed-jet carburetor probably is the more universally used because of its stability. With this carburetor, it is only necessary to determine the proper size jet for best performance and economy and to check the jet occasionally to see that it is flowing gasoline at the specified rate. The latter is made necessary by the fact that jets sometimes wear and sometimes become smaller.

There has been much conflicting discussion on the tendency of jet orifices to change in diameter. In view of this difference of opinion, the author procured a number of jets that had

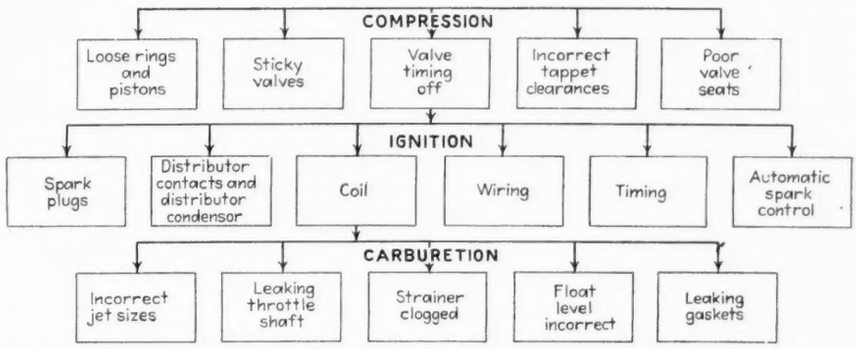
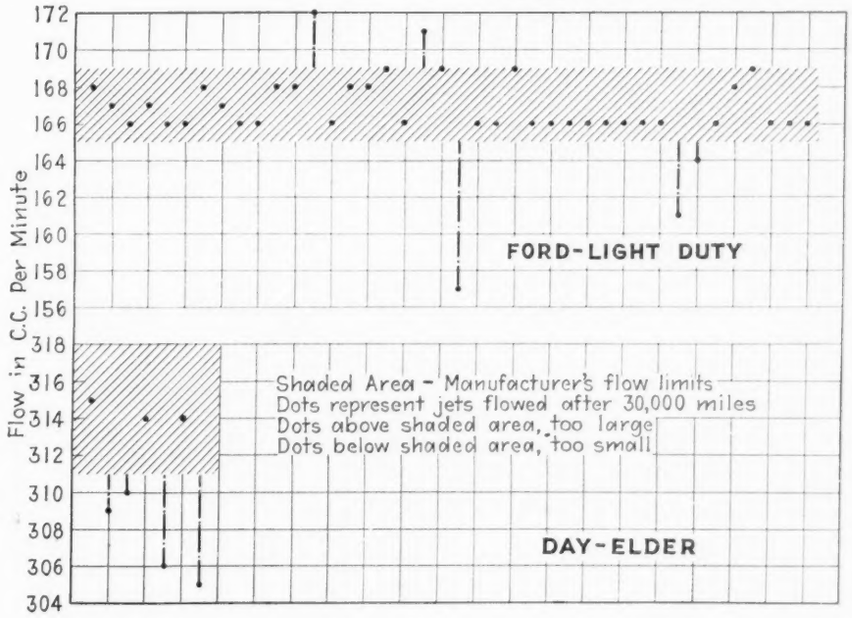


Fig. 1—Diagram showing steps in tune-up procedure and indicating where trouble may be located. This may be a worthy addition to the mechanic's instruction sheet.

strength of the spark across the plug terminals, the plugs ought to be tested under a pressure corresponding to that in the combustion chamber of the particular motor being inspected. Even though this check indicates sufficient potential across the terminals to produce a spark, there is no assurance that the spark is "hot." To determine that, the strength of the discharge in milliamperes must be measured.

Having gone over the compression and ignition and found the combustion efficiency of the motor still too low, the maintenance man's next move is to check the carburetion. Here's where the average mechanic goes astray. In the first place, he makes the mistake of associating poor mileage or power with

Fig. 2—Chart indicating how the flow rates for 48 tested carburetor jets changed during about 30,000 miles of service. Some of the jets have worn and others have become smaller.



been in service approximately 30,000 miles and made flow tests on them. The results are indicated graphically in Fig. 2. It is interesting to note that of the 48 jets tested, only two were found to be larger, while seven were smaller.

The principal cause for jet wear is the erosive action of the fuel, a factor that seems negligible until the smallness of the orifice and high velocity of flow through it is considered. Abrasive dust particles which enter the gasoline tank with the air that displaces the fuel consumed contribute to the wearing action. Consequently, more rapid erosion may be expected in vehicles traveling over dusty roads. Of course, gasoline filters are available, but it is doubtful whether any filter will efficiently remove the minute dust particles.

Jet wear may be caused also by the corrosive action of chemicals and coloring matter in the gasoline. There is a possibility that slow oxidation occurs on the inner walls of the orifice, with the gasoline removing the minute particles of scale formed. Incidentally, the fact that jet orifices wear is no reflection on the carburetor manufacturer.

Although generally unknown, the phenomenon of jet orifices becoming smaller is by no means a rare occurrence. One carburetor manufacturer states that if a number of main jets from cars in operation for an appreciable length of time were removed and metered, it is likely that more than 50 per cent of them would flow less gasoline than when they were originally put into the carburetors. This decrease in diameter is due to a deposition on the inner walls of the orifice, but the exact chemical action that takes place is as yet undetermined. However, this condition seems to occur more often in vehicles using the so-called anti-knock gasolines than in those operating on straight-run fuel. The anti-knock chemicals presumably form the deposit, although the action is slow.

Jets that are either too small or too large effect inefficient motor operation. The small jet gives a lean mixture and causes loss in power, which in turn means more operation in first and second gear, with the attendant increase in fuel consumption. The large jet gives a rich mixture, which is even more serious. The low air-fuel ratio not only decreases the mileage per gallon of gasoline but the excess gasoline washes the oil from the cylinder walls; causes crankcase dilution; produces excess carbon; enhances danger of plug failure due to a carbon short-circuit; and results in a highly colored and obnoxious exhaust gas.

The last item is of particular importance to food fleet operators, for many a truck load of foodstuffs has been spoiled as a result of permeation by exhaust gases. Moreover, when these fumes collect in the cab, their CO content lowers the vitality and efficiency of the driver.

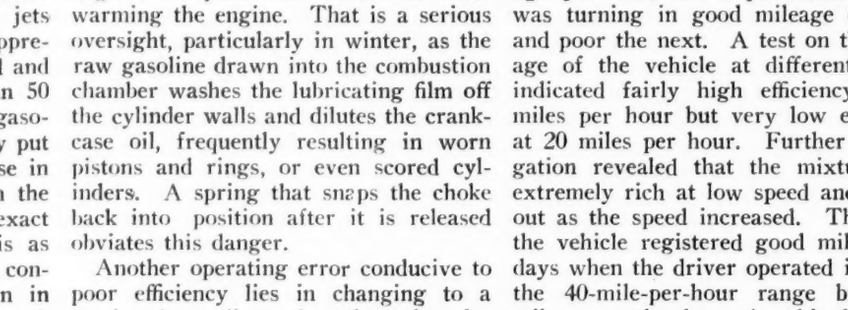
Even though a motor has been tuned to its maximum efficiency, there is ample opportunity for poor performance through maltreatment on the road. The manner in which the driver handles the vehicle has much to do with the mileage obtained. For example, there is the driver who taps the accelerator while waiting for the traffic lights to change, not realizing that each time he tamps the accelerator he is draining an accelerating well or causing a pump to shoot a quantity of gasoline through the carburetor. And drivers sometimes neglect to push the choke in after warming the engine. That is a serious oversight, particularly in winter, as the raw gasoline drawn into the combustion chamber washes the lubricating film off the cylinder walls and dilutes the crankcase oil, frequently resulting in worn pistons and rings, or even scored cylinders. A spring that snaps the choke back into position after it is released obviates this danger.

Another operating error conducive to poor efficiency lies in changing to a grade of gasoline other than that for which the carburetor is adjusted. Different gasolines have different specific gravities and viscosities. Since specific gravity and viscosity are factors affecting rate of flow through the jet orifice, changing them will obviously alter the air-fuel ratio. That is why one hears motor operators say, "I get good results from gasoline X, but I tried Y, and it was entirely unsatisfactory." Since this condition exists, it is considered good practice to set the carburetor for a particular gasoline and continue to use that fuel.

Another thing for maintenance men to keep in mind is that miles per gallon often is misleading as a yardstick of motor performance. The author recently had occasion to conduct tests and make certain changes on equipment used for city delivery. After the adjustments were complete, tests indicated an increase of about 15 per cent in miles per gallon, with no apparent sacrifice in power. However, the operating report for the following month showed a miles-per-gallon figure lower than that for the month before the adjustments were made. This was curious but not surprising, and it had occurred on other occasions. In the city, miles per gallon is appreciably affected by the number of times the vehicle is stopped and started and by the length of time the motor is idling. So therein lies the explanation. The vehicles had done more stopping and idling than in the month prior to adjustment.

Speed of operation is another important factor in efficiency of fuel consumption. This is borne out by a recent experience. A certain fleet was showing a more or less uniform mileage per unit, but a particular vehicle was turning in good mileage one day and poor the next. A test on the mileage of the vehicle at different speeds indicated fairly high efficiency at 40 miles per hour but very low efficiency at 20 miles per hour. Further investigation revealed that the mixture was extremely rich at low speed and leaned out as the speed increased. Therefore, the vehicle registered good mileage on days when the driver operated it within the 40-mile-per-hour range but poor mileage on the days when his deliveries were slow.

It is obvious that many factors are to be considered and each one weighed separately if fleet efficiencies are to be maintained or increased. The right kind of supervision, with a periodical scientific check of each vehicle, will pay remarkable dividends, not only in fuel economy but in a reduced number of motor overhaul jobs.



Part of a large fleet of trucks the efficiency of which has been increased more than 20 per cent by scientific tune-up. Exhaust-gas analysis pointed the way to this saving.

What the Voluntary Domestic Allotment Plan May Mean to the Food Industries

By LAURENCE V. BURTON
Editor of Food Industries

IT HARDLY seems possible that the Voluntary Domestic Allotment Plan for agricultural relief could ever be enacted into law, either in its present form or in any conceivable modification. Furthermore, it is extremely difficult to understand how any intelligent farmer or politician could fail to foresee just how this plan would work out. Yet hearings on the plan before the House Committee on Agriculture bear testimony to the curious, childlike faith of its proponents.

Perhaps the plan would bring about ultimate curtailment of agricultural production after several years of use, but adverse growing weather can and may accomplish the same end. Even so, the predictable events that would immediately follow enactment of the plan would be of such a character that all who would be affected by it, including the farmers themselves, would hate its very existence.

Everybody desires to see the farmer prosperous, for it is now generally realized that prosperous agriculture means a prosperous nation. If the Voluntary Allotment Plan held real promise of conferring prosperity on agriculture, there could be no rational basis for opposing it, but analysis of its provisions and an examination of the way in which it would work out will reveal that it has little of merit for the farmer and may cause hardship, if not actual disaster, to the very group it is intended to aid. Further repercussions may be expected for the manufacturer and the consumer.

At the moment of writing, the plan contemplates an excise tax on wheat, hogs, cotton, and tobacco, to be collected by the manufacturers at the point of first processing. Dairy products are also mentioned as a possibility. The tax would then be handed over to the government for redistribution (less administrative expenses and refund to the processors of the tax on exports) to farmers who voluntarily contracted with the government to reduce their acreage of wheat, cotton, or tobacco, or the number of hogs, to an allotment which would be determined by the Secretary of Agriculture to be the amount of actual acreage needed by the country to supply the domestic market and not produce an exportable surplus.

It its essence it appears to be more of a political than an economic movement, for ostensibly it is aimed to give the farmer the benefit of the tariff protection which he cannot now obtain with huge exportable surpluses that force the domestic market prices below world prices.

Effect of Tax on Millers

If 60 per cent of the wheat farmers voluntarily contracted to curtail their production, the Secretary of Agriculture (aided by a huge organization to be discussed later) would tell them how much land to put into wheat, the flour miller would be required to pay the 42-cent excise tax, and ultimately this amount, less the cost of collection, would be returned to the contracting farmer. Proponents declare that under the plan the farmer would receive the domestic market price of wheat plus 42 cents per bushel. Those wheat farmers who either are not eligible under the plan to sign an allotment contract, or prefer not to agree to an acreage reduction, would sell their wheat for whatever price they were able to obtain.

On hasty inspection the plan looks good. It looks so simple and so easy that the unthinking may regard it as assured of success. The flour miller buys his wheat as usual, pays the excise tax, and adds 42 cents a bushel to his wheat *costs*. And then what? Here is where the first trouble arises. The miller is expected to get the excise back from the consumer. Perhaps the miller might be able to do it if nothing but wholewheat flour were made in the country. Unhappily, however, in the production of the white flours, which constitute the bulk of the production, there is a very considerable yield of byproducts—so-called "red dog," shorts, bran, germ, and the like. Much of it is suitable only for animal feeds, and it, of course, comes into competition with other animal feeds.

To expect the wheat farmer or any other farmer to buy these feeds on which a 42-cent per bushel excise tax would be imposed for feeding his livestock is absurd. He would not do it. Therefore, the white flour would have to carry all of the burden of the excise tax, and the better the grade of flour the greater the tax burden per pound of flour. It is important to recollect that the tax is imposed on the wheat, not on the flour. It would be up to the miller to get it back any way he could, presumably by passing it on to the consumer.

A fancy cake flour is made from only about 50 per cent of the wheat used in its preparation. At present wheat prices the effect of the wheat tax would nearly double the cost of the flour. Is it to be supposed for a minute that the volume of sales of such a flour could be maintained with retail prices increased between 75 and 100 per cent? Hardly. The housewife would find a host of other desserts that would be cheaper, and thus the ice cream maker, the fruit canner, the gelatine dessert maker, the tapioca manufacturer, the confectioner and others would experience a volume increase of sales. And it would be at the expense of the soft-wheat miller—for a short time. He would have to bid less for his wheat, and before long the same old relationship of prices between various competitive foods would bring the price of soft winter wheats down to something like the former levels, even with the added tax. For a time the cake baker probably

Now pending in Congress are the Norbeck Bill, S. 4985; the Hope Bill, H.R. 12918. Other bills are S. 4984 and H.R. 12919.

would suffer seriously and conceivably might have to fold up.

Our study of the probable outcome of the enactment of the plan does not lead to quite such a desperate conclusion as is reached by some other commentators. We do reach the conclusion, however, that everybody will be far better off, including the farmers themselves, if it never becomes law.

Effect of Wheat Tax on Bakers

But let us consider the effect of the plan on the bread-baking industry and the hard-wheat millers. If it should become a law the bread baker would not be so seriously injured as the cake and pie baker because there are not so many direct substitutes for bread as for cake and pastry. He would have a better chance to hold his volume of business in the face of a 1, 2 or 3-cent per loaf price increase, but human nature is human nature. Many bread bakers would attempt to keep the price increase down to a minimum, and the use of substitutes for wheat would offer a very considerable lure. We could expect to see soybean flour, rye flour, corn flour, rice, and oatmeal used in many ways to help cut the costs. The makers of standardized advertised bread, such as Ward, General, Schulze, Continental, Langendorf, Van de Kamp and other large baking companies would stand to take a real beating on their advertised lines through competition from the newer breads which would have a part of the wheat substituted by some other farinaceous or carbohydrate material. Naturally they also would produce the substitute or tax-evading breads themselves in order to stay in business. And, as ultimately all things reach some sort of an equilibrium, the lessened demand for wheat for bread would be reflected back through the miller to the farmer. How far it would depress the price of hard wheat is problematical.

Cracker bakers would be in a position somewhat similar to bread bakers except that apparently they would have fewer choices of wheat substitutes. It is barely possible that this group would be able to hold their volume of sales in the face of a price increase brought about through the influence of an artificial boost of wheat prices, although it is very doubtful. And what it would do to the macaroni industry is too bad. There are no substitutes for semolina of durum wheat, although some manufacturers may substitute a hard wheat, but it is still wheat.

Inasmuch as the way of self-preservation for commercial flour users would be to substitute other products for a part of the wheat flour, it would be only prudent for all concerned to begin to study the product possibilities in this line. It hardly seems possible that the plan could be enacted, but some very foolish things have already gotten into the statute books, and others may follow.

In the whole group of directly affected food manufacturers the wheat-flour miller seems to stand to be injured more seriously through loss of volume and consequently higher unit overhead.

What the Tax Would Do to Packers

Hog raisers also would expect to come into the Voluntary Domestic Allotment Plan by a 2-cent per pound excise tax on live hogs to be paid by the pork packer. Here again it seems like a simple and easy proposal, and, like the wheat problem, it appears to be based on the mistaken notion that cost and selling price have some relationship to each other, whereas nothing could be farther from the truth. A commodity is worth only what it will bring on sale. Cost has nothing to do with it. If cost determined the selling price we would all be rich today and there would be no depression.

By taxing the pork packer 2 cents per pound of live hog, the plan would impose on him the task of getting the added cost back from the consumer. It seems simple—but we cannot compel the public to pay extra for one food when there are plenty of others at lower relative cost to choose from. There is not a pork packer in the country who would not be delighted to increase his selling prices. They would double them gladly, but try to do it! Likewise, there is not a producer or manufacturer of competing protein foods who would not be made sublimely happy to see pork prices doubled or tripled.

Hogs are now selling at between 3 and 3½ cents per pound, which means that pork loins are selling for around 8 to 10 cents per pound wholesale. If pork loins could be sold at nearly double this price the packer would be justified in bidding 2 cents per pound more for his hogs. But it is preposterous to think that the tonnage volume of pork could be maintained at such an elevated price level unless all other competing protein foods also were increased in price to a corresponding extent.

Those who lack an intimate knowledge of meat packing fail to realize that meat prices are determined by the willingness of the public to pay for the finished product. Meat is a perishable. It must be sold and consumed within a relatively short time after slaughter. If it will not sell at one price it must be sold at a lower price, for it cannot be stored indefinitely. Fresh pork has a commercial life of about ten days.

The volume of meat in trade is determined by the number of animals offered for sale. Meat packers do not manufacture meat, nor do they go out and commandeer animals. The animals are *offered* for sale by the farmers, and long experience has taught the packers that it is the part of wisdom to buy all the animals that are offered—at some price. This practice is what keeps the livestock markets going. The price which the packer offers the farmer or his broker is a reflection of the price the consuming public is willing to pay for dressed and cured meats.

Thus there are two stimuli going in opposite directions through the meat trade. One is the volume-stimulus arising at the stock yards; the other is the price-stimulus arising at the point of consumption.

No food business possesses more complex economics than meat packing, yet the law proposed apparently contemplates an arbitrary elevation of prices by 2 cents a pound for the live animal, equivalent to about 3 cents a pound on the dressed carcass. Any packer would be glad to raise the prices obtaintable for his products today, but try to do it!

Consider the byproducts. Can lard stand a higher price? Would readers who are bakers pay more for lard, or would they buy some other shortening? Would they pay more for lard, knowing that European nations can purchase it at lower prices because the law says the surplus over domestic needs may be sold abroad, minus the tax, at whatever price is obtainable?

It is folly to believe that the consuming public would step up and pay the price that full compliance with the law might require. They would buy something else. Only the substitutes would gain any advantage.

The market price of hogs would shrink by the amount of the tax and thus hogs which at present are selling for about $3.50 per 100 lb. would bring only $1.50 per 100 lb. if the tax were now effective. Only farmers located near the packing plant would be able to realize a net profit on the primary sale at this figure. The allotment certificate which the farmer would receive, were he a contractor with the government when the sale was made, would ultimately entitle him to his share of the tax collection. But, of course, the total tax fund available for distribution would suffer deductions for administrative expenses up to 2½ per cent and for drawback of taxes which would be paid to packers who exported their pork products. In this case the exporter would receive the export bounty, which, based on 2 cents per pound of live hogs, would become about 3 cents per pound of dressed pork. This feature, although absolutely in accord with the intent of the allotment plan, is most iniquitous, for it actually inadvertently gives the exporter a bounty—a bounty to be paid by the farmer who sells hogs.

It is easy to see that the business of exporting dressed pork and pork products would be rather attractive while the going was good. This export subsidy, to be paid by the farmer who expected to benefit by the plan, would yield a handsome profit margin that any packer would covet.

It would not be all joy for the exporting pork packer, however, for one of

the proposed bills calls for an immediate payment of the tax on all pork stocks in storage. *The National Provisioner* calculates the initial tax outlay would have been $14,250,000 had the law been effective on Dec. 1, 1932—quite a sizable outlay for an industry that has very few concerns today which are able to earn their dividends.

And the tragic feature of it all is that the agrarian group is actively fighting for a plan which any good business man can show to be as vulnerable and as full of holes as a sieve.

In some respects the problem of how to relieve agriculture reminds one of the statement once made by the general superintendent of a well-known Boston concern. Said he, "I don't know how it works, but, no matter what explanation you propose, I can prove it is wrong."

Relief Plan That Will Work

Leading food manufacturers with whom the allotment plan has been discussed exhibit a most tolerant attitude to the problem. To call their attitude sympathetic would not be incorrect, even when they realize that the plan would work real hardship to them. One executive has suggested a method of handling the vexing problem of agricultural surpluses which is far simpler than anything the farm group has proposed, if governmental interference is the only way out. He proposes to rent enough marginal land at from $2 to $4 per acre to reduce national production by 20 per cent and allow it to lie fallow. But this move must first be preceded by complete withdrawal of all public lands and stoppage of further irrigation projects. The cost of "sterilizing" submarginal and marginal land is calculated to be about $300,000,000 per year, but even this is only temporary. The only real solution to the agricultural problem is to reduce our national agricultural plant to a size comparable to our domestic needs by actual purchase of marginal acreage and its permanent removal from production, and this can be done only by government purchase of the poor lands.

The allotment plan contemplates an approximation of that effect without actually withdrawing an equivalent amount of land from cultivation. In this respect it parallels the prohibition law, which attempts to stop drinking without making it illegal to take a drink, and it will fail just as prohibition failed.

If the cost of purchasing marginal land seems too high, readers should recall that Abraham Lincoln once proposed that the federal government purchase all the slaves and free them. It was turned down as being too costly, yet the Civil War cost many times the estimated cost of all the slaves, quite apart from the value of lives lost in the conflict.

Staggering Task of Administration

So far the manufacturers' side of the problem has received all the attention. What about the task of administrating the proposed allotment plan in its effort to bring about that balance between agriculture and market which we call prosperity? Thirty days after its enactment the Secretary of Agriculture shall report on what acreage of wheat, cotton, and tobacco are needed and how many hogs shall be raised. Each crop is then to be allocated by states, then by counties, and next by townships, and finally down to individual acreage by a series of boards and committees. Details of the whole series of proposed operations are too voluminous to present here, but it is estimated by the committee on agricultural service of the Chamber of Commerce of the United States that it would involve 10,254 wheat committees, 4,308 cotton committees, and 18,573 hog committees—a total of 33,135 committees. The estimate does not mention tobacco at all, and, of course, the suggested dairy allotments have not yet been considered. In the administration of the plan it is thus estimated that between 150,000 and 250,000 committee members would be needed merely to tell the farmers what land should or should not be used. These would cost not less than $10 per man per day plus $5 probable expenses.

The vast number of records, the policing to prevent bootlegging of untaxed produce, the paper work in effecting the allocation of the bonus, and the veritable host of troubles that would arise from the scheme stagger the imagination. Even if the allotment plan would work it is doubtful if the creation of this new army of civil service employees would be worth the benefits the allotment supporters have hoped for.

Inconsistency of the Plan

Before leaving the subject it should be pointed out that the proposal for a general sales tax was defeated not so long ago on the ground that it taxed the very necessities of life of the poor. Then a manufacturers' sales tax was proposed, which also went down to defeat because the processed-food manufacturers, particularly canners, would be at a disadvantage in competition with untaxed, unprocessed raw foods. And then a flood of exemptions were demanded on food and clothing, and nothing more came of the measure.

In spite of this previous and very recent history, Congress at this moment is giving very earnest thought to a plan of taxing necessities of life for the benefit of the rural population—not for the benefit of the nation. Furthermore, it can hardly be classed as a constitutional measure because it fails to tax all alike.

Pork packers oppose the measure because it will surely breed resentment and discontent in the relationships between packer and farmer. Millers and bakers oppose the measure because it would work hardship to them and would foster further overproduction of wheat in the first years of its life and would encourage substitution for wheat. Other food manufacturers apparently stand to gain instead of lose.

One is tempted to believe that the only motives of Congress in holding hearings on the plan must be to allow the agricultural constituency to blow off steam, but if the safety valve fails to relieve all the agrarian pressure it means that something along these lines may actually be enacted. Therefore, everyone in the food business should follow it closely and be prepared for possible eventualities.

Under the allotment plan, this Pennsylvania wheat farm, right in the center of consuming population would have to submit to an acreage reduction. Would the owner see any justice in that? Would he favor a reduction to help a Montana farmer who has a big freight bill to pay to reach an Eastern market? Would an Eastern baker be benefited by having to pay his share of the freight on Western wheat?

ABSTRACTS OF CURRENT LITERATURE

VITAMINS. E. H. Reerink, A van Wijk and J. van Niekirk. *Chemisch Weekblad,* vol. *29,* pp. 645-50; Nov. 5, 1932.

Unlike the other vitamins, vitamin D is not supplied in adequate quantities by a good general diet; nature apparently intended that the action of sunlight on the bare skin should be the major source of this vitamin. In modern life, the only alternatives in case of deficiency are to administer cod liver oil or to enhance the vitamin D potency of selected food products. The commercial production of vitamin D food products immediately brings up the need for a control test less tedious than animal feeding, to permit rapid yet reliable checking of the quantity and uniformity of vitamin D potency in the product. It has now been found that irradiated ergosterol, the source of vitamin D for use in food products, can be tested by absorption spectrum measurements, and that this method when properly applied checks very closely with animal feeding tests of vitamin D potency. The new physical test has certain limitations; it is reliable only when the ergosterol has been irradiated in a certain way, and must be applied immediately after the irradiation unless special precautions are taken to prevent spontaneous change in the product. But with these limitations in mind, the absorption spectrum method may be expected to render valuable service in the production and proper use of irradiated ergosterol.

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BIOCHEMICAL ACTIVATION OF MILK. F. Schlemmer, B. Bleyer and H. Cahnmann. *Biochemische Zeitschrift,* Vol. 254, pp. 186-207; Oct. 17, 1932.

Experiments and analyses show the relationship between "reduction values" of milk and the content of vitamin C. Thus, by a method of titration, which is described in detail, the "reduction value" of milk is determined and from correlation with other experimental data, the vitamin C content of milk may be estimated at once. The "reduction value" varies widely with different milks; it is destroyed by boiling and by certain metals such as copper and silver; but it is more stable at lower temperatures and in contact with certain metals as nickel and aluminum.

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MILK IRRADIATED BY THE CARBON ARC LAMP. A clinical and laboratory study of rickets. A. F. Hess and J. M. Lewis. *Journal American Medical Association,* Aug. 20, 1932.

Pasteurized milk exposed for 16 seconds to carbon arc rays was rendered sufficiently antirachitic so that less than a quart a day prevented rickets in young infants, many of them negroes. The milk also had curative value. As in the case of "yeast milk," or milk from cows fed on irradiated yeast, the advantage of irradiated milk as a therapeutic agent in rickets is that it is automatic and at the same time supplies calcium and phosphorus. Laboratory tests show irradiated milk, like "yeast milk," to contain a smaller number of effective rat units of vitamin D than either cod liver oil or viosterol. The authors discuss the various antirachitic agents now in use and appraise their relative values and fields of service. They believe that irradiated fluid milk and "yeast milk" may be restricted to use in cities, while irradiated dry milk, cod liver oil, and viosterol may be used more extensively in rural communities. Irradiated yeast and direct ultra-violet irradiation are also discussed.

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AUTOMATIC METHOD FOR MEASURING GAS PRODUCTION AND EXPANSION IN DOUGHS. M. C. Markley and C. H. Bailey. *Cereal Chemistry,* Vol. 9, pp. 591-594; November, 1932.

An automatically registering mechanism for measuring the expansion of doughs has been made and described in detail. The operation depends on the displacement of air, which in turn actuates a recording needle on a kymograph chart.

* * *

EFFECT OF HEAT ON VITAMIN B. N. Halliday. *Journal of Biological Chemistry,* Vol. 98, pp. 707-717; November, 1932.

Study of the stability of vitamin B_1 to heat and alkalinity shows the following: (1) heating for 1 hour caused about 25 per cent loss at pH 4.3, 30 per cent at pH 7, and 70 to 80 per cent loss at pH 10; (2) heating for 4 hours caused 30 to 40 per cent loss at pH 4.3, 40 per cent at pH 7, and almost complete destruction at pH 10; (3) holding the solution for one week in the cold caused practically no loss at pH 4.3 or pH 7, but nearly complete loss at pH 10.

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IRRADIATION PRODUCTS OF ERGOSTEROL. A. Windaus and others. *Nachr. Ges. Wiss. Gottingen, Math.-Phys.* Kl., Vol. 3, pp. 150-159 (1932). [From *Nutrition Abstracts and Reviews,* Vol. 2, p. 254; October, 1932.]

The chemical reaction generated by irradiation of ergosterol leads to formation of toxic byproducts as well as the desired vitamin D material. The sensitivity of such irradiation products to oxidation adds to the argument for the use of crystalline vitamin D.

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PATHOLOGICAL CALCIFICATION. D. P. Barr. *Physiological Reviews,* Vol. 12, pp. 593-624; October, 1932.

The relationship of calcification to overdosage with irradiated ergosterol is of special interest. The review presents the main facts concerning clinical and experimental incidence of pathological calcification, and discusses the present knowledge of the chemistry of this subject. An extensive list of references also is given.

PACKAGED BUTTER. L. A. Sorensen. *Maelkeritidende,* Vol. 45, pp. 638-640; Aug. 5, 1932.

When butter is to be exported, many factors must enter into the producer's decision whether to ship in bulk or in packaged form. This problem is important, for example, in Denmark, where much butter is shipped to Great Britain. Over against the economies of bulk shipment stand the possibilities of greater consumer satisfaction, better prices, and increased sales if the butter is properly packaged. In an actual case, butter was shipped in special airtight cartons; it arrived in England in superior condition and consistency, and sold at a premium price. A further advantage of packaging is that the inevitable fluctuations in quality can be watched, to avoid mixing inferior butter with premium grades, much more effectively than with bulk shipments. For these reasons, the cost of packaging is considered to be a very profitable outlay from the exporter's standpoint.

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VITAMIN A RESEARCH. E. J. King. *Canadian Chemistry and Metallurgy,* Vol. 16, pp. 266-269; November, 1932.

A concise summary of work on this subject is given, with especial reference to the chemical aspects of the problem. An extensive bibliography also is included.

* * *

GAS PRODUCTION DURING DOUGH FERMENTATION. W. L. Heald. *Cereal Chemistry,* Vol. 9, pp. 603-616; November, 1932.

Gas production in dough is increased by the following factors: increased percentages of yeast, sugar and diastatic malts, yeast foods, and elevated temperatures up to 95 deg. F. Salt, excessive quantities of yeast foods and excessively elevated temperatures above 100 deg. F. cause decreased gas production in dough. A method for determining gas production on relatively small samples of dough during fermentation is described in detail.

* * *

IRRADIATED MILK. G. C. Supplee, H. H. Beck and M. J. Dorcas. *Journal of Biological Chemistry,* Vol. 98, pp. 769-782; November, 1932.

A definite intensity of radiation within the antirachitic range is necessary for effective and efficient utilization of energy for the antirachitic activation of milk. The progressive increase in the antirachitic potency of milk during irradiation follows definite principles within certain limits of applied energy irrespective of the source of radiation used. These principles are described in detail.

* * *

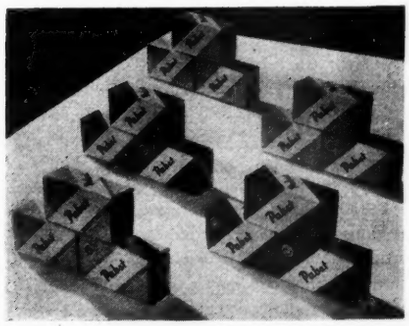
A NEW METHOD FOR THE DETERMINATION OF MOISTURE IN FLOUR. E. A. Fisher and J. Thomlinson. *Chemistry and Industry,* Vol. 51, pp. 355T-358T; Oct. 14, 1932.

This method requires 20 minutes and is based on the reaction of powdered calcium carbide with the moisture to form acetylene. The moisture content is calculated from the loss in weight. Details of the method are described and tests show it is subject to smaller errors than are the more usual oven methods of moisture determination.

NEW PRODUCTS
NEW METHODS

"Family Dress" for Cheeses

Pabst has given each member of its cheese family a dress cut from the same pattern. Strong resemblance is built up through identical layout and style of lettering, and identification of the different cheeses is made easy by variations in color. Brick American is orange; American, yellow; Swiss, light buff; limburger, darker buff; pimiento, pink; and Pabst-ett, a light red screen pattern. Clean ivory forms the background for all the designs, and brown lettering is used throughout. To heighten the effect of freshness and cleanliness, all the packages are varnished.



In display, the eye is unconsciously directed from unit to unit by diagonal bands on all sides of the packages, creating an impression of maximum size. These designs were developed by Fred Hauk, of Batten, Barton, Durstine & Osborn, Chicago.

Package Suggests Product

Working on the presumption that there's sales appeal in a container which symbolizes the product, Strohmeyer & Arpe Co., New York, has adopted an olive-shaped container as a new dress for "Re Umberto" imported olive oil. To enhance the attractive appearance of this container, the labels were made small and are attractively printed in red, green and aluminum, the latter predominating to harmonize with the aluminum seal on the bottle.

In addition to having "eye appeal" the container is practical. The shape fits the hand to make pouring easy; the base is broad and heavy to prevent tipping; the beauty of the bottle adapts it to table use; and the seal has tamper-proof and reclosure features. The practical details were worked out in cooperation with Aluminum Seal Co.

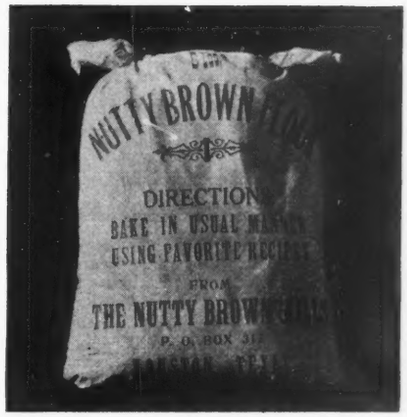
Vacuum-Packed in Glass

Coffee packed in a "visible vacuum" offers new marketing possibilities, in the opinion of the Batterton Coffee Co., Birmingham, Ala. This company has adopted the process of vacuum-packing coffee in glass, perfected by Owens-Illinois Glass Co., for its Royal Cup Coffee. The jar in which the coffee is packed has rounded sides to provide the added strength required for vacuum sealing. A two-piece screw cap is used, and a flange on the jar gives it re-use value for home canning operations.

Cottonseed Flour

Cottonseed flour in palatable form for human consumption is being made by Nutty Brown Mills, Houston, Texas. The new product, known as Nutty Brown Health Flour, contains practically no starch—1.07 per cent, to be exact—and is rich in protein to the extent of 51 per cent. Its analysis is asserted to be practically the same as that of European soya bean flour, but it is held to be much more palatable.

The flour is packaged in straight and bulk form for bakers, who mix it with wheat flour in the ratio of 1 to 4 or 1 to 3. As sold for home consumption, it is mixed with wheat flour high in gluten content. Being low in starch, bread containing the flour can be included in the reducing diet or in the diet of diabetics. And the high protein content gives the 1 to 4 mixture as much nourishment as meat and eggs, according to Dr. G. S. Frapps, state chemist, College Station, Texas.



Reclosing Container

An air-tight, sift-proof carton that opens easily and yet serves as a reclosure container has been adopted by National Biscuit Co., New York, for its Chocolate Snap, Cracker Meal and Nabisco packages. Perforations on one side of the container at a point below the "glue line" permit the consumer to break it open and lift the cover. A flap that extends below the line of perforation keeps the cover down when the package is reclosed. The new Uneeda box is reported to effect a 14 per cent saving in cardboard and lining. The new container is used under a license issued by Daller Carton Co., Inc., New York.

Stews Ready to Serve

"Heat and Serve" is the enticing slogan carried by a line of canned meat dishes introduced by Crosse & Blackwell, Baltimore, Md. C. & B.'s line of "ready dishes" includes lamb stew, Irish stew, beef stew, kidney stew, curried lamb with vegetables and rice, and curried beef with vegetables and rice. Each can contains a "meal for two."

These canned dishes are topped off with a rich stock gravy, contain high-grade vegetables, and provide a blend of vegetables and meat that is said to be popular and consistent. To these factors and a low retail price, the company attributes a ready acceptance for the products.

Men, Jobs and Companies

INDUSTRY

AMERICAN FARM BUREAU FEDERATION, which held its 14th annual meeting in Chicago early in December, is waging a campaign against extension of Philippine sugar production.

BOOTH FISHERIES is closing its branches in St. Louis, Detroit, Pittsburgh and Philadelphia, according to R. P. Fletcher, who has charge of the reorganization. However, a cold-storage branch will be continued at St. Louis. A new plan of operation will be ready soon, Mr. Fletcher says.

BORDEN CO., New York, has created a department of sales and distribution analysis as an adjunct of the general executive offices. The department will study trends, conditions, potentialities and methods affecting the sale and distribution of all Borden products. It will also suggest, develop and promote new products, methods and services. The new department will be under the direction of Stuart Peabody. R. V. Jones will serve as director for the ice cream division and J. P. Johnston for the fluid milk division. Appointments for other divisions have not been announced.

COCA-COLA CO. has boosted its appropriation for advertising to $1,000,000 for 1933. This marks the third increase in sales promotion funds made by the company in as many years.

CONTINENTAL BAKING CORP. has announced a 5-cent loaf of Wonder Bread, and it is making its 10-cent loaf larger. This is the first time the company has sold its Wonder Bread at 5 cents.

CRYSTAL GELATINE CO., Peabody, Mass., recently opened a Western office in Chicago. L. B. Esmond, formerly manager of Essex Gelatine Co., Boston, Mass., will direct the Western division.

FARMERS & MANUFACTURERS BEET SUGAR ASSOCIATION, with headquarters in Bay City, Mich., representing more than 18,000 sugar beet farmers and all of the beet sugar companies in Ohio, Michigan and Indiana, has launched a campaign to encourage the reopening of all the beet sugar factories in the three states.

HILLS BROS. CO., New York, through a free booklet, "How You Can Make Money With Dromedary Dates," is securing new consumers. The booklet gives directions for making confections at home, and if the party receiving it is interested, she obtains six "home-packing kits" for a few cents. Each kit in use sells six packages of Dromedary dates. Up to the middle of November, 80,000 women wrote for the booklets and 8,000 decided to become home confectioners for Christmas pin money or to help charity.

LOOSE-WILES BISCUIT CO., Long Island City, N. Y., was recently found guilty by the U. S. District Court of misbranding crackers. It was held that the company labeled a product as "Sunshine Strawberry Cream Crackers," when, according to a government chemist, the crackers contained no strawberries.

MAYONNAISE MANUFACTURERS' ASSOCIATION, in carrying out its plans for a more expansive and far-reaching program of activity, voted to center authority in the person of an executive vice-president. And it elected W. F. L. Tuttle, publisher of *Groceries*, to the new office. Mr. Tuttle will have the authority to carry out the association's policies and will act as a mediator in trade disputes.

MCCORMICK & CO., Baltimore, Md., has formed an organization of junior executives which will meet once a month to discuss business problems. Worthy suggestions made by the junior executives will be presented to the board of directors. Richard T. Pilling, Jr., assistant advertising manager, heads the junior organization.

EARL D. STEWART

NEW AMSTERDAM BREWING CO. has started work on its new plant at Nassau Heights, N. Y. The $2,500,000 plant will be completed in about eight months, it is estimated, and another three months will be required for installation of equipment. The plans call for an initial capacity of 250,000 bbl. a year. The company plans to include a beer garden, the largest in the United States, in its new development.

REID MURDOCH CO. recently purchased 1,000 head of Hereford cattle and 3,000 head of sheep in eastern Montana and is shipping them to Minnesota feeding grounds to be fattened during the winter.

SUN-MAID RAISIN GROWERS' ASSOCIATION has developed a transparent cellulose package for raisins as a means of adding more sales appeal to the product. Nectar seedless and puffed seeded raisins will be packed in these containers in 2- and 4-lb. quantities.

UNITED GRAPE PRODUCTS SALES CORP., Buffalo, N. Y., has undergone complete reorganization and has acquired two plants from the creditors' committee. These plants are at Silver Creek, N. Y., and Lawton, Mich. The new organization has acquired the capital, stock, good will and trademarks of the former company. Fred B. Meyer is president and treasurer; Arthur L. Strickland, vice-president and secretary.

PERSONNEL

H. J. BIRD, Swift & Co., Chicago, was recently chosen president of American Association of Creamery Butter Manufacturers. C. W. KENT, of American Dairies, Kansas City, was elected vice-president and T. A. BORMAN, of the Beatrice Creamery, Chicago, was named treasurer.

ELIAS S. BYK, general manager of J. Fred Schmidt Packing Co., Columbus, Ohio, has been elected president of Buckeye Beef Co., Cleveland. The Buckeye company was incorporated several weeks ago to engage in a general beef-packing business. Mr. Byk will continue with the Schmidt company as a member of the advisory board.

TALBOTT DENNY, an assistant vice-president of Ward Baking Co., in the Chicago territory, recently left the Ward company to purchase the Bon Ton Food Shop, a bakery at Fort Wayne, Ind.

C. LEONARD FARDWELL has been promoted to general sales manager of McCormick & Co., Baltimore, and WALTER M. DAVIS has been made sales manager. This change was made to divide the increasing responsibilities of the sales department.

A. W. FARRALL recently resigned as director of the research laboratory of Douthitt Corp. and is now engaged in research for Creamery Package Manufacturing Co., Chicago. Mr. Farrall is a former professor of dairy engineering, having served the University of California, College of Agriculture, Davis, Calif., in that capacity.

I. O. JUVRUD, milling and baking chemist, who has served as special representative of the Corn Products Refining Co. for the past four years, joined the division of laboratory and production service of W. E. Long Co., Chicago, Dec. 1. Mr. Juvrud has had wide practical experience, having served different yeast, milling and baking companies. He is an active member of the American Society of Bakery Engineers and served as one of the first chairmen of the west coast section.

L. R. MAXWELL, Standard Brands, Inc., was recently made president of the Chicago Association of Manufacturers' Representatives. Other new officers of the organization include E. D. JOHNSON, of R. B. Davis Sales Co., and W. A. SAYLES, of Canada Dry, vice-presidents; M. J. RILEY, Kellogg Sales Co., secretary; R. H. KASPER, Wesson Oil Co., assistant secretary; C. O. DICKELMAN, Drackett Chemical Sales Co., treasurer. JACK GINDER, Quaker Oats Co., was selected to head the new board of directors.

HARVEY O. MERCIER, engineer in charge of development work for National Biscuit Co., New York, has been promoted to manager of the engineering department and consulting engineer for the company and all subsidiaries. The promotion became effective Dec. 1.

EDA MUELLER, of George A. Mueller Candy Co., Springfield, Ill., has been appointed to serve on the economic credit council of the National Association of Credit Men. This council, which represents the larger cities, functions to aid in calculating the trend of business conditions.

RALPH OVERHOLT has resigned as operating manager of Pillsbury Flour Mills Co., Springfield, Ill., to enter the insurance business in Minneapolis. His duties have been taken over by RONALD J. GIBBS, manager of the company's specialty department for the past three years.

V. H. PELZ recently resigned as director of research of the American Institute of Food Distribution to accept the editorship of *Food Field Reporter*, a new food trade publication. This paper will be a fortnightly. The first issue appeared on Dec. 19.

WASHINGTON PLATT, of the research laboratories of Borden Co., Syracuse, N. Y., addressed the Association of Official Agricultural Chemists in Washington, D. C., Nov. 1, on "Higher Versus Lower Mathematics in Interpreting Baking Quality."

GEORGE L. SCHMIDT has been reelected president and treasurer of J. Fred Schmidt Packing Co., Columbus, Ohio. EUGENE HENSEL was made secretary. LEROY KIRSCHNER, public accountant and auditor for the company, was named a director along with Schmidt and Hensel.

L. J. SCHUMACHER, American Cone Pretzel Co., Philadelphia, was reelected chairman of American Bakers' Association at the Dec. 7 meeting of the board of governors in Chicago. HENRY STUDE, of Chicago, is president of the association; ALTON HASTINGS, Hathaway Bakeries, Boston, first vice-president; GERALD R. WILLIAMS, Williams Baking Co., Scranton, Pa., second vice-president; and M. LEE MARSHALL, Continental Baking Corp., New York, treasurer. The executive secretaryship was returned to TOM SMITH.

EARL D. STEWART, until recently Pacific Coast editor of FOOD INDUSTRIES, is now chief chemist for Consumers Compressed Yeast Co., Oakland, Calif., manufacturer of compressed yeast and spirit vinegar.

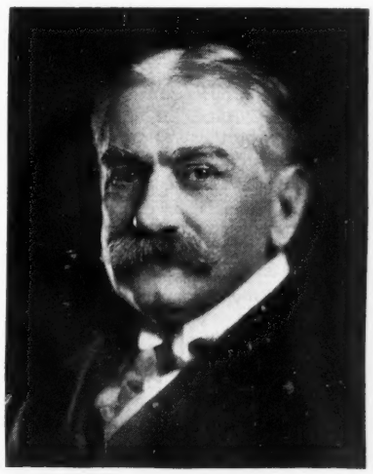
A. J. WALLACE, formerly of the general superintendent's department of Libby, McNeill & Libby, in charge of sauerkraut plants, has retired and is now living at South Haven, Mich.

H. H. WHITING, who has been a vice-president of Pillsbury Flour Co., Minneapolis, Minn., for a number of years, has been chosen to succeed the late A. C. Loring as president of the company. Mr. Whiting has been associated with the Pillsbury company for 30 years, starting as a secretary.

DEATHS

ROBERT C. CLARK, building executive for Armour & Co., Chicago, died recently at the age of 72. Mr. Clark had charge of the construction of several plants for the company, these being located in various parts of the world. Another Armour employee, J. P. DOWDING, manager of the cold-storage division, is dead. He was 57.

WILLIAM C. EDGAR, formerly editor of *Northwestern Miller* and president of Miller Publishing Co., died Dec. 2 after a brief illness from pneumonia. Mr. Edgar, who was 75, had been connected with the milling paper for 42 years, joining the staff in 1882. During that time he became prominent in the milling industry, and at the beginning of the World War he provided Mr. Hoover with plans for organizing the milling trade and also assisted in the Belgian relief work.



WILLIAM C. EDGAR

HUGH F. FOX, for the past 25 years secretary of the United States Brewers' Association, died Nov. 29. Mr. Fox was born in Gloucestershire, England, 69 years ago. He came to this country at the age of 19 and entered the hop business, with which he had been connected ever since.

ARNOLD S. GRAHAM, general superintendent of the Bristol Bay Canneries of Libby, McNeill & Libby, Seattle, Wash., died Nov. 25. Mr. Graham was a pioneer in the fishing industry, having begun as a boy of 13 on the Columbia River. He came over the Oregon Trail in an oxcart in 1865. During the famous Alaska gold rush of 1898, he ran a pack train over the Chilkoot Pass and afterward resumed salmon fishing.

ALBERT C. LORING, president of Pillsbury Flour Mills Co., Milwaukee, and known as the dean of flour millers, died Dec. 11 of pneumonia. Mr. Loring was 74, and had been connected with the milling industry since 1877, when, at the age of 19, he became secretary and treasurer of the Minnetonka Milling Co.

PAUL R. MCKEE, 53, vice-president and secretary of Carnation Co., Milwaukee, Wis., died of heart attack, Dec. 4. Mr. McKee was also a director of General Milk Co., New York, and of the American Specialty Manufacturers' Association.

ALBERT SPANG, a director of J. Spang Baking Co., Cleveland, died Nov. 30. Born in Germany 55 years ago, Mr. Spang came to this country in his boyhood and worked as a delivery boy in a bakery established by his parents.

HOWARD WINTER, 84-year-old pioneer of the salmon canning industry and a man who, with Andrew S. Hapgood, holds the honor of canning the first Columbia River salmon, recently died in Bellingham, Wash. He had been ill only a short time. Mr. Winter's first salmon canning venture took place 67 years ago, when he began operations at Waterford.

ASSOCIATED INDUSTRIES

ARMSTRONG CORK & INSULATION CO., Lancaster, Pa., has formed a new sales division called a closure division, headed by Dwight L. Armstrong, a vice-president of the company. The new division comprises three departments devoted respectively to caps, crowns and corks.

CHERRY-BURRELL CORP. has appointed L. O. Ott district manager of territory covered by Western associate distirbutors of the company. Mr. Ott has been manager of the Brockville (Canada) office and factory for the past two years.

GOULDS PUMPS, INC., announces the acquisition of Hydroil Corp., Lebanon, Ind., manufacturer of oil purifying apparatus. The Lebanon plant is being discontinued and the business and equipment transferred to the Seneca Falls plant of the Goulds company. D. B. Clark, vice-president of Hydroil, and W. P. Alexander, factory and field representative, will join the Goulds organization.

L. R. H. CONSULTANT SERVICE, 26 West 9th St., New York, N. Y., has recently been established to serve manufacturers of food products and household appliances who do not maintain home economics departments, but who need expert opinion and assistance in testing and developing recipe booklets, product formulas and container designs.

MERCK & CO., INC., Rahway, N. J. manufacturing chemists, announce the appointment of Dr. Hans Molitor, of the University of Vienna, to the research staff of the company. Dr. Molitor will assume direction of research work in pharmacology.

NATIONAL OIL PRODUCTS CO., Harrison, N. J., is enlarging its sales organization to distribute Vitex, vitamin D concentrate, on a nation-wide scale. The product has been used successfully by a limited number of bakeries and dairies for some time.

NORFOLK & WESTERN RAILWAY CO., 225 Broadway, New York, N. Y., is offering a fast through freight and daily package car service, ocean and rail, via Norfolk and Western Despatch and Cumberland Gap Despatch. It recently issued a bulletin of rates.

STEPHENS-ADAMSON MANUFACTURING CO., Aurora, Ill., has acquired the United States right to manufacture and distribute the English Redler conveyor. The company has issued a 4-page folder to explain the unusual principles on which the conveyor operates.

STUTZ MOTOR CAR CO., Indianapolis, Ind., has completed the negotiations necessary to permit it to manufacture the Pak-Age-Car, an automotive delivery vehicle designed to compete with the horse-drawn wagon.

UNITED COMPANY, of Westminster, Md., has appointed as its sales representative for the United States and Canada A. K. Robins & Co., Baltimore, Md., which will sell the entire TUC line of corn-canning equipment.

BUSINESS TRENDS

German Demand for Lard Expected to Improve

Unless the eating habits of the Germans or their methods of producing lard undergo a change, neither of which is likely to occur, the demand in Germany for American lard will continue to improve in proportion to the decrease in German hog production which is now under way. This prediction, made by the Department of Agriculture, is based upon statistics indicating that lard consumption in Germany has been well maintained during recent years, increasing from 368,000,000 lb. in 1925 to 414,000,000 lb. in 1931, and that the consumption of butter and margarin, the chief competitors, has declined since 1930. Other favorable factors are seen in the fact that threats to establish either a contingent on lard imports or a fat monopoly now do not seem serious and very likely will be dropped.

The only important restriction on lard imports is the tariff of 1.08 cents per pound. This, however, will be increased to 1.35 cents per pound on Feb. 15, 1933, when the German-Swedish trade treaty, which fixes the most-favored-nation tariff, will be abandoned.

From 1923 to 1931, the average annual imports of lard into Germany were 223,650,000 lb., of which about 83.8 per cent was from the United States.

BASIS FOR THE CURVES

Retail food prices, factory employment, factory payrolls and wholesale prices are based on indexes of the Department of Labor. Cost-of-living index is that of the National Industrial Conference Board. Electrical power consumption figures are furnished by *Electrical World*.

Food Prices Remain Above Low Point

In the face of continued decline in commodity prices, as 1932 ends, the business world is pervaded with an atmosphere of grim determination. All factors seem content to face a long, hard pull instead of desperately grasping at floating straws.

The Business Week Index of business activity stands at 52.4 per cent of normal for the week ending Dec. 17. A month ago it was at 51.8 per cent of normal; a year ago, 64.6 per cent.

Wholesale prices of all commodities, as reported by the U. S. Department of Labor, slipped 1.87 per cent during the month ending Dec. 17; were 1.1 per cent lower than at the low point on June 18; and 8.16 per cent lower than a year ago. Wholesale food prices fell 4.07 per cent during the month ending Dec. 17; were 5.13 per cent higher than on June 18; but 14.9 per cent lower than a year ago. A weighted index shows a decline of 3.48 per cent in price of all commodities for the month ending Dec. 24; a 0.36 per cent decline since May 28, the low point for this index. By the same index food prices declined 4.06 per cent during the month period, but show[ed] rise of 5.76 per cent since Ma[y] 28.

A. & P. tonnage sales decreased 4.9 per cent during November. Volume of sales for November, 1932, was 5.61 per cent lower than for November, 1931.

Home Canning Operations Reach New Intensity

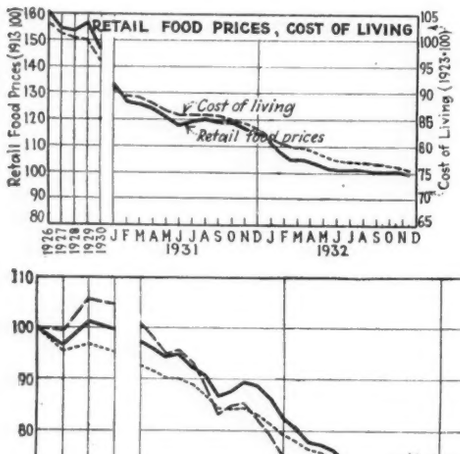
Home canning operations, a depression bugaboo of food manufacturers, appears to have attained new proportions during the last two years. In 1931, sales of glass jars for this purpose totaled an estimated 2,000,000 gross, an increase of 73 per cent over 1929. The really significant factor, however, was the sale of rubber rings, which cannot be used a second time. Sales of rings reached an estimated total of 14½ million gross, or about 2,088,000,000. If all of these rings had been put to use in 1931, on pint jars only, the food thus preserved would have been the equivalent of about 419,000 carloads of canned foods, figuring 48,000 1-pint jars equal to a carload. If this figure is real, which is doubtful, it means that 1931 home canning was 2¼ times as great as the total industrial production of canned fruits, vegetables and fish in 1929.

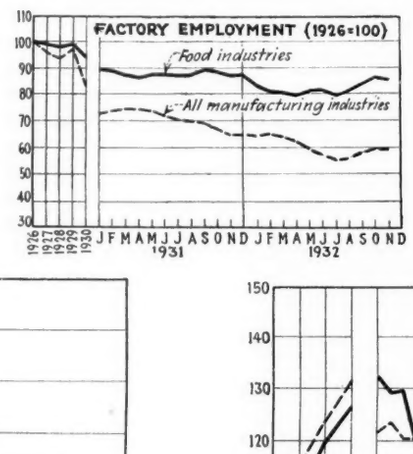
Just how many pint, quart, or two-quart mason jars were used in the home and how many for purely industrial use we probably shall never be able to learn.

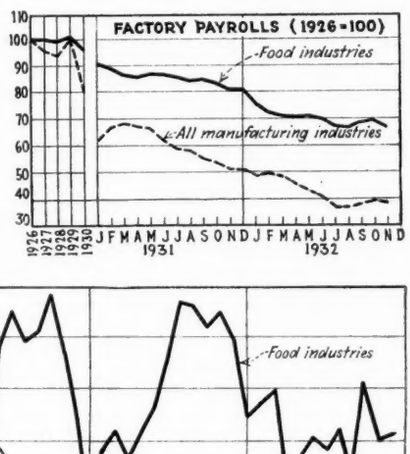
It appears that 1932 production of home canned foods has not decreased materially from 1931, although sales of jars are known to have been materially less.

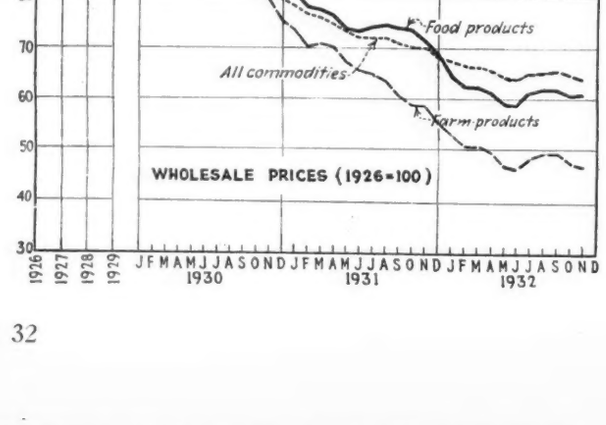
Five Millions Lost Yearly

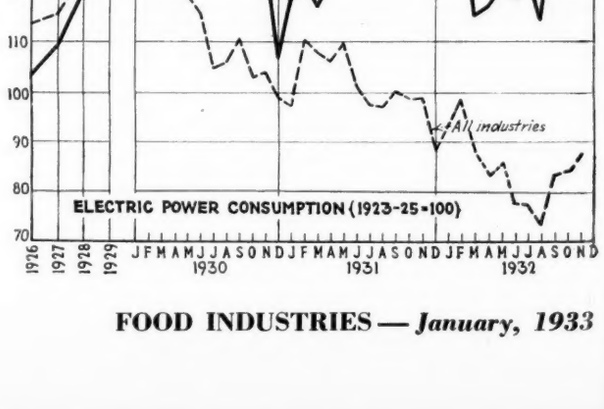
"More than $5,000,000 a year in profits goes over the dam within the confectionery industry, due to manufacturers' going off 'half-cocked' on rumors, generally traced to a buyer trying to work one salesman


RETAIL FOOD PRICES, COST OF LIVING
Retail Food Prices (1913 100)
Cost of Living (1923-100)
Cost of living
Retail food prices
1926 1927 1928 1929 1930 J F M A M J J A S O N D J F M A M J J A S O N D
1931
1932


FACTORY EMPLOYMENT (1926=100)
Food industries
All manufacturing industries
1926 1927 1928 1929 1930 J F M A M J J A S O N D J F M A M J J A S O N D
1931
1932


FACTORY PAYROLLS (1926=100)
Food industries
All manufacturing industries
1926 1927 1928 1929 1930 J F M A M J J A S O N D J F M A M J J A S O N D
1931
1932


WHOLESALE PRICES (1926=100)
Food products
All commodities
Farm products
1926 1927 1928 1929 J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1930
1931
1932


ELECTRIC POWER CONSUMPTION (1923-25=100)
Food industries
All industries
1926 1927 1928 1929 J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1930
1931
1932

against another or to a salesman with an ear for loose gossip." is a statement by Joseph Gooch, Jr., president of Candy Institute of America, Inc. In looking ahead to 1933, Mr. Gooch continued, "It is impossible in 1933 for any number of manufacturers to keep out of the 'red' except through prices that can permit paying their way and not borrowing. When volume goes down, prices must be held up. If every manufacturer would recognize the fundamentals of this situation—adjust himself intelligently to a smaller volume—taking out of this industry the present hectic, destructive state of price warfare, he would have something to show for his year's work."

Doesn't Pay to Cull

Cattle prices came very close to reaching an all-time low record in mid-December, with beef steer prices ranging from $3.25 to $5.25, and lower grade animals down to $1 per hundred. At such low prices there is no incentive for dairy farmers to cull their herds, because it is cheaper to feed than ship. And the flow of milk continues.

Depression Not Responsible For All the Troubles

Industry's troubles will not all be cleared away with the passing of the depression, we are reminded by F. Hall Wrightson, president, Tri-State Packers' Association, Inc. In speaking at the meeting of the Tri-State association on Dec. 14, Mr. Wrightson said in part: "Another ailment whose cure we need not expect at the end of this depression is that which permits the domination of the food markets of the country by a comparatively few big buyers; the system which permits organized buying but does not permit organized selling. The big buyer is not to be blamed. The system is to be blamed, and we cannot see much daylight until the answer is found.

"We are now furnished with many examples of the results of easy credit. This policy eventually hurts the very ones whom it was intended to help by encouraging the recipient to operate on a larger scale than his capital justifies, leaving him too small a margin of safety when reverses are encountered."

Dairy Profits Face Drop

Milk prices have been reduced by 1 or 2 cents a quart in certain large cities, particularly in the Middle West and around New York. This is generally interpreted as a move to prevent newly formed cooperatives, consisting of new dairy farmers, from cutting into established milk trade. The probable effect of these cuts will be to deplete earnings.

Too Many Birds in Storage

Turkeys retailing at from 20 to 23 cents per pound in the holiday season is but a reflection of the huge stocks of birds in cold storage. Department of Agriculture and Markets of New York report that on Dec. 1 there were in storage 4,387,822 lb., of which 3,350,000 lb. were in New York City. The total amount compares with 302.164 lb. in storage on Nov. 1, a year previously.

More Soup Consumers?

Increased consumption of canned soups, with corresponding reduction in the sale of foods which the soup replaces, is predicted as a result of entrance of Heinz and Hormel into the canned soup field so long dominated by Campbell Soup Co. This prediction is based on the assumption that the competitive advertising of these important companies will have a creative effect, and will secure many new consumers for canned soup.

As the Breeze Blows

PORK PRICES are the lowest since 1878 (or were at press time). Hogs are selling around $3 per hundred, with not much relief in sight. Colder weather will help increase consumption as well as impede the flow to market.

QUAKER OATS Co.'s Cedar Rapids (Iowa) plant is operating at full capacity for the first time in two years. Rolled oats was reduced from a 10-cent to a 5-cent seller early in December.

FISHING is experiencing its seasonal low production period, with consequent higher prices, but the market has been very soft. Low pork prices have been a serious factor of inter-commodity competition.

WINTER WHEAT yield of only 400,000,000 bu. for 1933 was forecast by the Department of Agriculture. Unseasonably cold weather and shortage of soil moisture are largely responsible.

THAT RUSSIA may begin to import wheat as well as other foodstuffs by spring is regarded as likely by some students of the situation. The big question is, What will the Soviet comrades use for money?

OUTCOME of the move to free the Philippine Islands is being watched very closely by dairy, cottonseed oil and domestic sugar interests. No immediate aid can come to domestic manufacturers, but many a sigh of relief will go up when the final decision is reached.

NEW ORLEANS will hold its first dairy and beef cattle show in April. This event is significant of the trend toward a greater production of butter and meat in the South, a condition unfavorable to food industries of the North.

Censuses of Manufactures for Food Industries

(Summaries for 1931 and 1929)

Meat Packing, Wholesale

	1931	1929	Per Cent Change
Number of establishments	1,209	1,277	— 5.3
Wage earners (average for the year)[1]	106,594	122,505	—13.0
Wages[2]	$134,358,991	$165,867,420	—19.0
Cost of materials, containers for products, fuel, and purchased electric energy[2]	$1,837,568,298	$2,974,127,757	—38.2
Value of products[2]	$2,177,236,785	$3,434,654,098	—36.6
Value added by manufacture[3]	$339,668,487	$460,526,341	—26.2

Bakery Products

	1931	1929	Per Cent Change
Number of establishments	17,714	20,785	—14.8
Wage earners (average for the year)[1]	183,000	200,841	— 8.9
Wages[2]	$238,559,606	$274,561,581	—13.1
Cost of materials, containers for products, fuel, and purchased electric energy[2]	$504,109,711	$737,099,500	—31.6
Products, total value[2, 3]	$1,189,228,490	$1,526,110,811	—22.1
Bread and other bakery products	$1,185,069,737	$1,521,776,456	—22.1
Other products	$4,158,753	$4,334,355	— 4.1
Value added by manufacture[4]	$685,118,779	$789,011,311	—13.2

Butter

	1931	1929	Per Cent Change
Number of establishments	3,260	3,527	— 4.7
Wage earners (average for the year)[1]	15,612	19,097	—18.2
Wages[2]	$18,687,356	$24,197,840	—22.8
Cost of materials, containers for products, fuel, and purchased electric energy[2]	$392,004,239	$635,873,586	—38.4
Products, total value[2, 3]	$462,070,370	$746,417,620	—38.1
Butter	$426,727,796	$692,245,417	—38.4
Other products	$35,342,574	$54,172,203	—34.8
Value added by manufacture[4]	$70,066,131	$110,544,034	—36.6

Condensed and Evaporated Milk

	1931	1929	Per Cent Change
Number of establishments	485	535	— 9.3
Wage earners (average for the year)[1]	6,121	7,065	—13.4
Wages[2]	$7,256,004	$8,795,629	—17.5
Cost of materials, containers for products, fuel, and purchased electric energy[2]	$109,398,438	$163,786,818	—33.2
Products, total value[2, 3]	$148,598,031	$209,109,700	—28.9
Condensed and evaporated milk and related products	$134,081,484	$198,912,252	—32.6
Other products	$14,516,547	$10,197,448	+42.4
Value added by manufacture[4]	$39,199,593	$45,322,882	—13.5

1. Not including salaried officers and employees. The average number of wage earners is based on the numbers reported for the several months of the year. Thus it becomes necessary to give equal weight to full-time and part-time wage earners in calculating the average, and therefore the average may overstate somewhat the amount of full-time employment. For this reason the quotient obtained by dividing the amount of wages by the average number of wage earners cannot be accepted as representing the average wage received by full-time wage earners.

2. Manufacturers' profits cannot be calculated from the census figures because no data are collected for certain expense items, such as salaries, interest on investment, rent, depreciation, taxes, insurance and advertising.

3. For 1931, production; for 1929, sales (shipments or deliveries) by manufacturers.

4. Value of products less cost of materials, containers for products, fuel and purchased electric energy.

THIS MONTH—

JANUARY

15—American Engineering Council, annual meeting, Washington Hotel, Washington, D. C.

16-18—Institute of American Poultry Industries, annual meeting, Medinah Athletic Club, Chicago, Ill.

16-Feb. 15—Exhibition of New Materials, New Products and New Uses, National Alliance of Art and Industry, 65 East 56th St., New York, N. Y.

20-21—Mayonnaise Manufacturers' Association, Edgewater Beach Hotel, Chicago, Ill.

23-24—National Preservers' Association, annual meeting, Congress Hotel and Annex, Chicago, Ill.

23-27—National Canners' Association, annual meeting, Hotel Stevens, Chicago, Ill.

23-27—National Food Brokers' Association, annual meeting, Hotel Stevens, Chicago, Ill.

25—National Pickle Packers' Association, annual meeting, Palmer House, Chicago, Ill.

Hors d'Oeuvres

AT LAST we've found a container that has real reuse value. While it's nothing but a vinegar bottle, it has a nice convenient flask-like shape and is just the size of a hip pocket. A molded screw cap permits it to be reclosed as often as is necessary. Old Virginia Packing Co. sponsors it.

•

TABASCO SAUCE recently "burned up" members of the British House of Commons, but the Louisiana peppers weren't to blame. The tongues of the "Buy British" exponents were hot "about" the sauce, not "with" it. It seems they found it being used right in their own House of Commons restaurant.

•

SOMETHING NEW in international exchange has been introduced in Europe. The Swiss cheese makers have agreed to deliver 50 ten-ton carloads of the "ventilated" cheese to the Soviets in exchange for gasoline and anthracite coal. We wonder if the Russian peasants will be put on a diet of holes.

•

ONE HUNDRED prominent New Yorkers recently ate a meal in the Waldorf-Astoria that cost only eight cents per plate. The menu was one of 21 worked out by experts to reduce the food budgets of the unemployed. It looks as if Bernarr Macfadden will have competition.

Genealogy

FOOD INDUSTRIES was founded in October, 1928, by the McGraw-Hill Publishing Co. Dr. H. C. Parmelee was its first editor. Dr. Laurence V. Burton succeeded him and is its present editor. Associated with him are E. S. Stateler, R. S. McBride (Washington, D. C.), and L. C. McCarthy, assistant editors.

What Food Men Are

The Month With Beer—Food Plants Cash Crops Low, More Feed—on Edible Fats—Foreign

LEGAL BEER by Christmas seemed a possibility when Congress convened early in December. But Christmas is history and we have no beer—no legal beer. Speaker Garner attempted to secure "naked" repeal of the Eighteenth Amendment, but failed by a small margin. With repeal hopeless, the wets concentrated on the passage of the Collier bill proposing 3.2 per cent beer (4 per cent by volume), and it went through the House by a vote of 230 to 165 on Dec. 21.

During the fight in the House, attempts were made to attach sales and gasoline tax and wine riders to the Collier bill, but the measure came through unencumbered by "extras." Unfortunately for one branch of the beverage industry and for one phase of agriculture, the Ways and Means Committee struck the wine provisions from the bill on Dec. 15. The wine interests, however, continued to back the measure.

The final blow to the "beer by Christmas" move came Dec. 23 when the Senate voted by 48 to 23 against "hasty" action on the Bingham bill, for which the Collier bill would have been substituted. This action, however, was not considered by responsible leaders to have altered the prospects for the success of the measure in the Senate.

Some interesting statistics came to light during the beer debates in the House. R. A. Huber, vice-president of Anheuser-Busch, St. Louis, and representing the United States Brewers' Association, listed the following immediate capital outlays to be made by the brewing industry in reviving itself: new capital investments, $175,000,000; materials, $75,000,000; new cases, $12,000,000; new bottles, $15,000,000; new labels, corks and caps, $5,000,000; new cooperage, $40,000,000; automobile delivery trucks, $15,000,000; advertising and sales campaigns, $16,000,000 to $20,000,000.

REHABILITATION projects involving the expenditure of $105,266,429 by industrial plants and retail establishments in the United States are under way or will begin shortly. These figures were given out by A. W. Robertson, chairman of the Committee on Industrial Rehabilitation, Dec. 18.

Food manufacturers are contributing in no small way to the revival-of-business program. In the Fourth Federal Reserve District, Haller Baking Co. is spending $30,000 for a new distribution building; Ward Baking Co., $10,000 for a sealing unit and baking pans; Eatmore Chocolate Co., $30,000 for rehabilitation; Fort Pitt Brewing Co., $65,000 for modernization; Independent Brewing Co., $230,000; and Pittsburgh Brewing Co., $70,000.

In the Seventh district, food companies are making the following expenditures: Paul F. Beich Co., candy manufacturer, $2,000 for modernizing old machinery and purchasing new; Armour & Co., $25,000; Cudahy Bros. Co., $110,000; Gridley Dairy Co., $45,000; Luick Dairy Co., $7,000; Milwaukee Stockyards Co., $7,000; and Plankinton Packing Co., $100,000.

In the Eighth district, Hunter Packing Co. has budgeted $100,000 for rehabilitation and building; Circle Packing Corp., $9,000 for a new building; Kroger Grocery & Baking Co., $150,000 for repairs and replacements; and Standard Brands, Inc., $20,000 for new machinery.

The Twelfth district rehabilitation programs include: Best Foods, Inc., $130,000 for new building and equipment; Sperry Flour Co., $7,000; Fleischmann Co., $750,000 for a new yeast plant; D. Ghiradelli, $20,000 for modern equipment; Arder Salt Co., $150,000 to $200,000 for rehabilitation; and Euclid Candy Co., $6,000 for a corn-syrup pumping plant.

INDEPENDENCE probably will be granted the Philippines in 1943 by a compromise bill passed by the Senate Dec. 22 and now ready for approval by the House. President Hoover is almost certain to veto the measure, according to Senator Bingham, chairman of the Senate committee having jurisdiction over the bill. But it is highly probably that the measure will be passed over the veto, and if not, it will likely be put through perfunctorily at a special session.

The import quotas of the bill, as proposed by the House and accepted by the Senate, include 850,000 long tons of sugar, 800,000 tons of which is raw. Two hundred thousand long tons of coconut oil would be allowed to come in duty-free. The measure would also allow the islands to levy export taxes during the last five years preceding their independence.

The bill carries an amendment denying independence until the Philippine legislature approves the measure.

FINAL official crop estimates for the 1932 season indicate a substantially heavier production of feed crops but a decrease in cash crops as compared to the past two years. Production of corn, oats, barley and grain sorghums is the largest since 1920, the quantity of feed grains per unit of grain-consuming animals being about 10 per cent above the ten-year average.

Among the cash crops produced in reduced quantities are wheat, rice, rye, beans and buckwheat. Fruit production was considerably less than normal and the quantity of vegetables grown for commercial canning was the lowest in several years.

Doing and Saying

Rehabilitate—Philippine Situation—Increase in Pigs—Propose Duty Dairies—Investigations

The 1932 field corn crop was 13 per cent larger than last year, or 2,908,045,000 bu., of which 2,508,920,000 bu. was husked for grain. Eleven per cent more oats was produced, the total being estimated at 1,242,437,000 bu., and barley production was placed at 299,950,000 bu., the third largest crop ever grown.

There was a 58.7 per cent decrease in winter wheat production compared to last year, the estimate being 462,151,000 bu. Production of durum wheat, however, totaled 39,868,000 bu., a 92 per cent increase over last year. And spring wheat other than durum was estimated at 224,812,000 bu., more than double last year's crop. Production of rye was placed at 39,855,000 bu., with acreage harvested 7 per cent more than last year.

The supply of beet sugar is forecast at 1,300,000 short tons, or 8 per cent higher than any previous crop. Cane sugar output is placed at 231,000 short tons.

PORK PRODUCTION apparently faces an increase a few months hence, since the total 1932 fall pig crop is officially reported to be 4 per cent larger than last year. However, the small spring pig crop makes the combined spring and fall production 3 per cent less than in 1931.

The government also reported an increase of 1.8 per cent in the number of sows to farrow next spring. But breeding intentions in most of the western corn belt states are low in view of the large corn crop, the high ratio of hog prices to corn prices and the greatly reduced pig crops in some of those states in 1932. Ordinarily, such conditions result in a sharp increase in production, but apparently the extremely low prices have produced an abnormal effect.

DOMESTIC producers of organic edible fats and oils believe it is time something was done to protect them from foreign competition. And the National Dairy Union, with that in mind, has unanimously adopted a resolution favoring "an adequate federal tax on all edible oils and fats products sold in this country in which there has been used, as a constituent part in the manufacture thereof, any organic fat or oil which is not the product of an animal or vegetable which is produced within the limits of the continental United States." The union authorized its officers to have prepared and introduced in Congress a bill proposing such a tax.

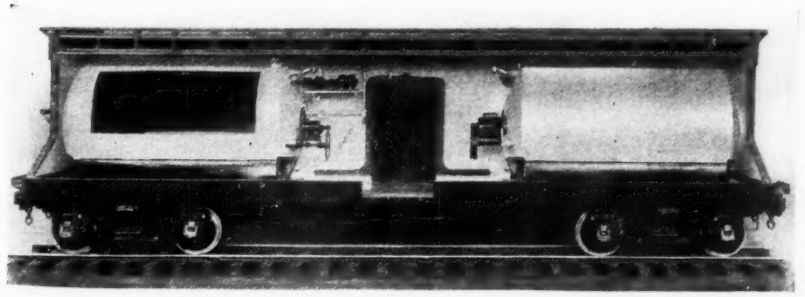
Although the domestic supply of edible fats and oils is sufficient to meet domestic demands, nearly a half billion pounds of "cheap imported oils" is used in making mayonnaise, salad dressings, cooking compounds, oleomargarine and the like, the union asserts.

FOREIGN dairy industries seem to be going in for centralized control. Two large companies in the mandated territory of Southwest Africa have brought about an arrangement whereby all creameries in that area will be closed except those at Omaruru, Windhoek and Gobabis. This movement is expected to reduce overhead costs, eliminate overlapping, and stabilize prices and quality. Investors in the dairies to be closed are protected by a guarantee of 10 per cent on their capital.

In Lithuania, almost the entire exportation of dairy products is controlled by the institution Pienocentras, and this organization plans to erect a $20,000 factory for the manufacture of condensed and powdered milk.

PACKAGES have been classified into fifteen groups under which they will be entered in the competition at the Packaging and Packing and Shipping Conferences to be held in conjunction with the Packaging Exposition, March 7-10, at the Hotel Pennsylvania, New York. The classifications, established by a committee headed by C. B. Larrabee, associate editor, Printers' Ink Publications, follow: tin, glass, wood, molded plastic, display, and shipping containers; tubes; visible display packages, covering containers of flexible material, as transparent cellulose; paper bags and envelopes; set-up boxes; folding cartons; canisters; the family of packages; packages displaying merchandising ingenuity; and miscellaneous.

Insulated tank car in which beer probably will be carried to distribution centers.



—AND THE NEXT

FEBRUARY

6—American Honey Institute, annual meeting, with exhibit, St. Louis, Mo. Mrs. Malitta Fischer Jensen, secretary, 417 North Few St., Madison, Wis.

6-8—American Honey Producers' League, annual meeting with exhibit, St. Louis, Mo. V. G. Milum, secretary, 104 Vivarium Bldg., Champaign, Ill.

6-10—National Malt Products Manufacturers' Association, annual meeting, Chicago, Ill. S. L. Goldman, secretary, 160 North La Salle St., Chicago, Ill.

12—National Cheese Producers' Federation, annual meeting, Curtiss Hotel, Plymouth, Wis. R. B. Melvin, secretary, Plymouth, Wis.

20-March 4—Package Exhibition, National Alliance of Art and Industry, 65 East 56th St., New York, N. Y.

27-March 4—Fourteenth Exposition of Chemical Industries, biannual, Grand Central Palace, New York, N. Y.

—American Winegrowers' Association, annual meeting. L. J. Vance, secretary, 302 Broadway, New York, N. Y.

NOTICE has been given that a public hearing will be held Feb. 9 in the office of the Tariff Commission, Washington, D. C., in connection with the investigation of the cost of production of cocoa and chocolate and cocoa butter. The commission also announces that an investigation has been ordered, under the flexible tariff provisions, of the cost of production of frozen swordfish.

Another notice from the Tariff Commission announces the dismissal of applications for decreases in the duty on whole eggs, egg yolk and egg albumen, frozen or otherwise prepared or preserved, and in the duty on mushrooms.

BEER will learn a thing or two about transportation from milk when it again becomes a legal beverage. Bulk shipments, instead of being made in bottles or kegs, probably will be carried in insulated glass-lined tank cars. It is believed that the most efficient method of transporting beer over long distances will be to put it into one of these 6,000-gal. tank cars at the brewery and carry it thus to district bottling plants where it can be bottled for local distribution. Reduced investments in equipment and lower freight charges are favorable to this method.

A car of this type, a cut-away view of which is shown in the illustration, recently transported a load of milk from Janesville, Wis., to Miami, Fla., a 54-hour trip, with only one degree rise in temperature. This was done without refrigeration and through territory where the temperature range varied over 66 deg.

General American Tank Car Corp. expects to place about 1,000 of these cars in service upon the return of beer.

SHIPPERS will no longer be able to offer "immediate" delivery and then send the shipment "at their convenience," at least

not in the canning industry. Canners' League of California has obviated this by approving definitions of "immediate" and "prompt." For domestic shipments, "immediate" designates five full business days after booking, while "prompt" signifies ten days. For exporters, "immediate" allows ten days, and "prompt" three weeks.

Canadian Berry Industry Plans Expansion

Berry growers in British Columbia are planning an export organization to take advantage of the 25 per cent tariff preference offered Empire berry pulp processed in sulphur dioxide. The present program of the promoters calls for the production of between 500 and 1,000 tons of the fruit pulp this year, and it is expected that markets will be secured in Eastern Canada as well as in Great Britain.

The sulphur dioxide process of preserving fruits is asserted to be comparatively cheap, when other methods are considered, and much lower freight rates apply to the product than to fruit that must be iced in transit. These factors, together with the 25 per cent preference, are expected to provide a comfortable margin of profit.

There is a large British demand for processed berries for use in the manufacture of jam.

New Tax Ruling

Since bottles, jugs, kegs, barrels, demijohns and carboys are closed containers, mineral water sold in them is subject to tax, whether the container is owned by the seller or the buyer. Buckets and pails, on the other hand, are not closed containers, and mineral water sold in them is not taxable. This ruling was recently announced by the Tax Department with respect to the tax on soft drinks.

"Baby" Refrigerator Car Adopted by Hormel

To facilitate the transportation of small loads of perishable products by railway, Hormel has adopted a 10-ton, all-steel, ice-refrigerated car designed by North American Car Corp.

The rate of heat transmission through the walls of this car is said to be about one-fourth that of the ordinary refrigerator car, which is twice as large, and its ice consumption is rated at only 13 lb. per hour for a temperature differential of 60 deg. Maintenance of good insulating conditions in the car is made easy by a design which permits the entire outer steel shell to be lifted from the frame to expose all part of the insulation.

Crab Meat and Barley Malt Retain Former Duties

Acting on recommendations by the Tariff Commission, President Hoover denied any change in the duties on crab meat and barley malt under the flexible tariff provisions. In its report on crab meat, the commission contended that cost of production in the United States and the principal competing country, Japan, does not furnish an adequate basis for determining the duty on crab meat. The opinion of the commission was based principally upon the fact that domestic and imported crab meats are from two widely different species of crab and that only about 2 per cent of the domestic production is canned, while all imports are packed in that manner. Another influencing factor was seen in the fact that wholesale prices of the domestic meat have fallen materially during the past three years, whereas prices of the imported products have remained stationary.

In the case of barley malt, on which the present rate of duty is 40 cents per 100 lb., it was found that domestic cost of production exceeds that in Canada by 40.6 cents per 100 lb. Most of the imports are from Canada, 1,000,000 bu. coming from that country in 1931.

Educational Food Exposition To Be Held in New York

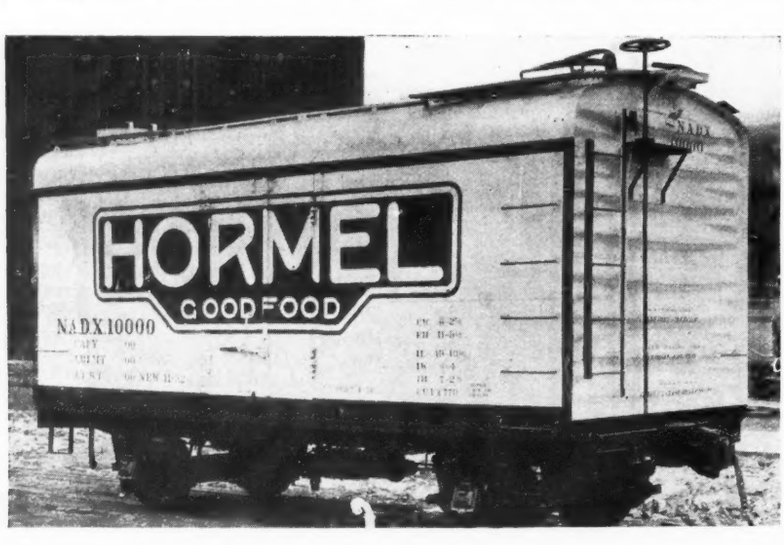
New Yorkers will soon have an opportunity to acquire valuable and accurate information on foods. At Grand Central Palace, where the First Annual New York Food and Health Exposition will be held from April 3 to 8, food manufacturers will display their products and medical men expert in matters of diet will tender advice. Special significance attaches to this exhibition, since it will bring producers and distributors of foods together with medical men and health authorities. It is also significant that no products will be displayed that are not passed upon by the advisory council, which consists of well-known health experts. In view of the importance of New York as a food market, many food manufacturers are expected to participate in the exposition.

Sugar Solution Taxable

Sugar in solution is not a syrup as far as customs officials are concerned. A decision by the U. S. Court of Customs and Patent Appeals on Dec. 5 held that sugar imported in solution was subject to the regular duty of 2 cents a pound and not at the ¼ cent rate for sugar syrup. The decision was made upon the court's belief that "the article as imported is admittedly something which was prepared for the specific importation and entry made. It was not intended that it should enter into the general commerce of the country in the state in which it was imported."

Concentrates

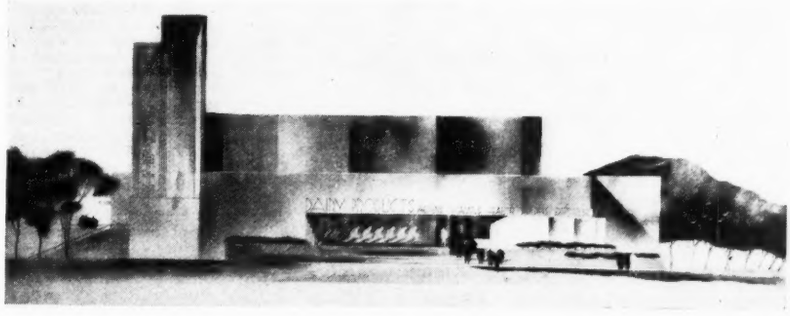
American Management Association announces a competition for the Second Irwin D. Wolf Award for the most effective package developed and placed on the market between Jan. 1, 1932, and Feb. 15, 1933. The receiving dates are Feb. 1 to Feb. 10 . . . The New York market consumes almost two billion dollars in foodstuffs yearly, or 16.17 per cent of the total consumption of the nation . . . Egg production in this country increased 15 per cent from 1919 to 1925 and more than 40 per cent from 1925 to 1929, being 2,690,000,000 dozen in the latter year . . . The production of California citrous fruits has increased 1,420 per cent in 39 years . . . The official summary of cold-storage holdings for Dec. 1 showed that 27 of the 35 commodities listed were stored in lesser quantities than a year ago . . . Seventeen pounds of corn products, called brewers' grits, are used in each barrel of beer, according to a report from a meeting of corn products manufacturers . . . Enough flour is obtained from a bushel of wheat to make from 48 to 57 one-pound loaves of bread . . . The protein content of wheat grown on early, clean-tilled fallow soil was greater than for wheat grown on late summer fallow soil in field tests in Oregon, Washington and Utah . . . At the University of Wisconsin tests have been completed on a new barley, called Pedigree 38, which is said to be superior to the old grade for making beer . . . If pasteurized milk is cooled like raw milk is cooled on the farm, then warmed to 80 to 90 deg. and separated in the usual manner, the thickness of the pasteurized cream can be increased until it is almost equal to that of raw cream, according to Dr. A. C. Dahlberg, New York State Agricultural Experiment Station . . . The output of canned corn dropped from 19,080,192 cases in 1931 to 9,122,822 cases in 1932 . . . Thirteen billion bottles of carbonated beverages are produced each year in the United States . . . Italy now produces 92 per cent of her wheat supply . . . In Chile, 300,000 cattle pasturing on the eastern slopes of the Andes are perishing for lack of grass.



Story of Food Manufacturing To Be Told at World's Fair

THE STORY of creation—creation of the great industrial age—will unfold before the eyes of spectators at Chicago's International Exposition from June 1 to Nov. 1, 1933. More than 300 leading corporations and associations, 42 states and 16 foreign countries will be represented in this panorama of a century. And their exhibits will not consist merely of lifeless samples. Instead, products will be made and assembled, painting a living picture of industrial operations and showing what goes into manufactured articles.

Food manufacturers will be well represented at this 1933 World's Fair. Two of the most important food industries plan group exhibits. The three billion dollar dairy industry will sponsor an exhibit in a special, modernistic Dairy Building which will be 167x114 ft. This exhibition will portray the magnitude of the industry and the relation of its products to a healthful diet. Separate products, including milk in various forms, ice cream, cheese, butter and byproducts, will be exhibited in a manner to emphasize the progress made through science and improved production methods.



Architect's conception of Dairy Building at the World's Fair

Components of the meat industry will present the second unified exhibit, depicting the story of meat from the "hoof" to the consumer. Various steps in the processing and marketing of meat will be described. Emphasis will be placed upon the care taken in packing and shipping, and the exhibitors will point out the strict supervision exercised by the government through its inspectors. Dioramas, murals, moving displays, prepared materials and other media will tell the story.

The meat group and all the other food manufacturers, aside from the dairy industry, will have their exhibits in the Agricultural Building. This is a vast structure shaped something like a three-toothed key, modern in design, dramatically illuminated and painted in expressive colors. The building is one story high, 628 ft. long and 108 ft. wide, with the three wings extending 60 ft. in the direction of Lake Michigan. Construction work on the building is almost completed.

Many of the leading food companies will arrange individual exhibits. Standard Brands, Inc., will have a commercial exhibit of yeast, coffee, baking powder and other products, and a scientific exhibit showing the bacteriology and chemistry of yeast. The Hall of Science, rather than the Agricultural Building, will house the latter.

The H. J. Heinz Co. will present the successive stages in the development of the food factory from the primitive kitchen to the modern, scientifically controlled plant. And the deduction will follow that the Heinz plants belong to the latter class.

Libby, McNeill & Libby will use dioramas to demonstrate that food factories must be very close to the source of raw materials to produce the highest quality of product. They will depict salmon canning in Alaska, a pineapple plant in Hawaii, an olive packing establishment in Spain, fruit packing in California, vegetable packing in the central states, milk evaporation in Wisconsin and meat packing in Chicago. This exhibit will give the public an idea of the diversity of conditions under which these foods are obtained.

Quaker Oats Co. will demonstrate how oatmeal, puffed rice and other breakfast foods are made. In other words, the company will give a mechanical interpretation of its slogan "Quaker Oats From Quaker Guns."

General Foods Corp. will display a wide variety of its products, but aside from a plan to demonstrate its quick-freezing process, the details of presentation have not been finally decided upon.

National Biscuit Co. will show how it makes and packs a new type of biscuit, and the company may include other products in its exhibits.

National Sugar Refining Co. of New Jersey, like Standard Brands, will have two exhibits. One, in the Hall of Science, will be devoted to the chemistry of crystals, and the other, in the Agricultural Building, will tell the story of cane sugar from the plant to the consumer.

The Coca-Cola Co. will have a complete plant for making and bottling the "refreshing" beverage, the output of the plant, 120 bottles a minute, being sold to visitors at the exposition. Forty stands will distribute Coca-Cola at 5 cents a bottle, an all-time low for a thirst quencher at a fair or carnival.

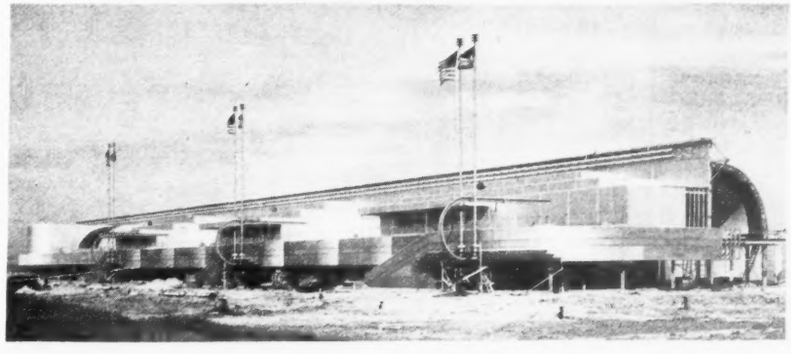
The Morton Salt Co., by means of a specially constructed model and murals, will show how salt is obtained and how it is refined. The model, elaborate in detail, was made by the Museum of Science and Industry in Jackson Park, Chicago, and will become a part of its permanent exhibit.

Atlas Brewing Co. has financed the building of a brewery model as a part of its exhibit. After the exposition, the model will go to the Rosenwald Museum of Science and Industry in Chicago.

Kraft-Phenix Cheese Corp. and McCormick & Co. have contracted for space at A Century of Progress, and the Orange Crush Co. has the concession for orange drinks, which will sell for 5 cents.

The success of the World's Fair is said to be assured. Every major exhibit which the exposition itself will erect is either completed or under construction. Several special buildings contracted for by private or public interests are likewise being built and work on others is about to start. Contracts for concessions totaling more than $4,500,000 have already been signed, and unprecedented public interest in the Exposition is indicated by the fact that between June 1 and Dec. 1 more than 600,000 people paid to preview the grounds.

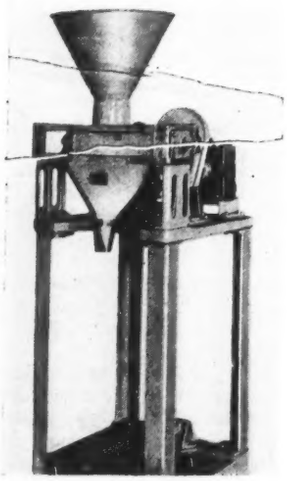
Construction work on the Agricultural Building is nearing completion. It will house all the commercial food exhibits except those of the dairy industry.



NEW EQUIPMENT FOR

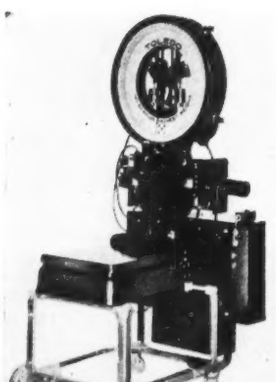
Small, High-Speed Rotary Crowner

Bottles may be crowned at the rate of 150 per minute with the new 8-head rotary crowner, manufactured by Liquid Carbonic Corp., 3100 South Kedzie Ave., Chicago, Ill., and a variable-speed transmission unit makes it possible to regulate the machine to any capacity down to 45 bottles per minute. An automatic compensation device takes care of variation in bottle heights. Other advantages attributed to the crowner include a safety gate which automatically synchronizes the filler with the crowner, new segment type flexible crown throats, removable crown rests and a glass wiper. A floor space of only 35½x34 in. is required.



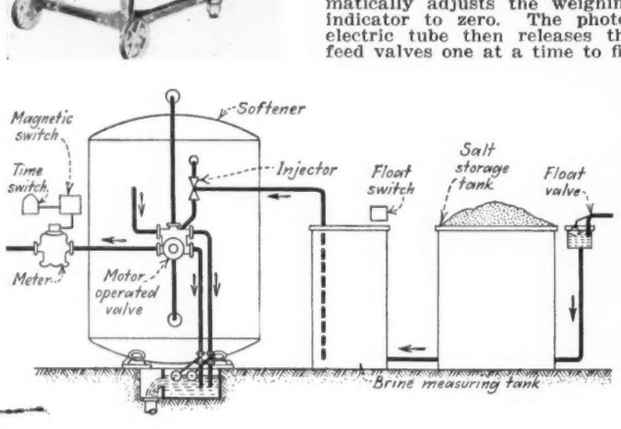
Adjustable Filling Machine

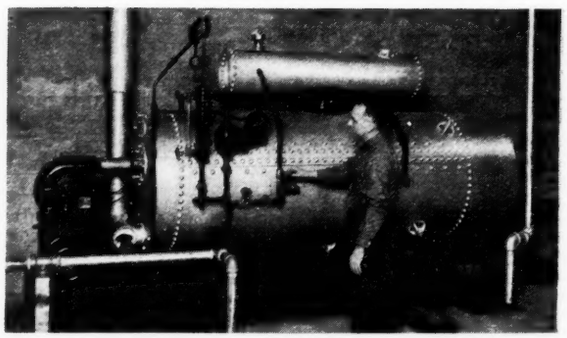
Bags, cartons or cans may be filled with tea, shelled nuts, flaked and puffed cereals, and similar products to an accuracy of 1/16 oz. by the simplified filling machine developed by Stokes & Smith Co., Summerdale Ave. near Roosevelt Blvd., Philadelphia, Pa., according to the maker. The machine operates by means of a slide which has pockets that take quantities ranging from 1 oz. to 5 lb., these pockets being adjusted by a hand screw. The machine, which requires only one operator, has a capacity of 30 to 35 packages per minute. The unit can be supplied with a base and frame or made for fastening to a table.



Scale Compensates For Container

Compensation for the weight of both compartments of double containers used in packaging lard, or other semi-solid or liquid products, is made by a weighing machine announced by Toledo Precision Devices, Inc., Toledo, Ohio. This unit consists of a Toledo Auto-Gage equipped with a photoelectric tube and an automatic tare device. In operation, a tare indicator is set at zero and indicators are set for the respective weights of the two compartments of the box. With the empty container on the Auto-Gage, the operator pushes a button and the tare device automatically adjusts the weighing indicator to zero. The photoelectric tube then releases the feed valves one at a time to fill the two compartments. The unit cannot operate again until the filled container is removed. If desired, this Auto-Gage can be furnished with the automatic tare attachment alone, packaging operations being done by hand, as with the unit shown in the illustration.





Two-Ply Steel With Clean Finish

Nickel-clad steel with a finish that is free of the brown nickel oxide has been announced by International Nickel Co., 67 Wall St., New York, N. Y., and Lukens Steel Co., Coatesville, Pa. The new finish, classified as "hot-rolled and cleaned," has a matt appearance nearly white in color, with a surface asserted to be superior to that produced by standard plate-mill practice. Nickel-clad steel is available also in a wider range of sizes. This bimetal comprises a nickel layer, ranging up to 20 per cent of the total plate thickness on a backing of flange quality steel.

Transparent Lacquer

Originally developed to serve as a spot for crown closures, a transparent lacquer introduced by Truslow & Fulle, Inc., 48 Wilson St., Brooklyn, N. Y., is offered for coating and dressing a wide range of material. The manufacturer holds the lacquer to be entirely impervious to alcohol, ether, chloroform, acetone and water, to be resistant to alkaline beverages and to acids as strong as 4 per cent dilute sulphuric, and to be odorless and tasteless. The product is recommended by the maker as a coating for bags and wood and paper boxes.

Automatic Water Softener

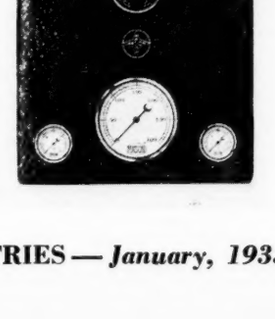
Errors in operation are eliminated by an automatic industrial zeolite water softener announced by Permutit Co., 440 Fourth Ave., New York, N. Y. In operation, a meter actuates electric controls at the end of the softening run to cut the softener out of operation and backwash it for cleansing. The controls then admit a regulated quantity of saturated salt brine for regeneration, rinse out the hardness salts and throw the softener back into service. The meter governs the volume of water softened during the run. The automatic control may be applied to existent down-flow softeners.

Low-Cost Oil-Burning Boilers

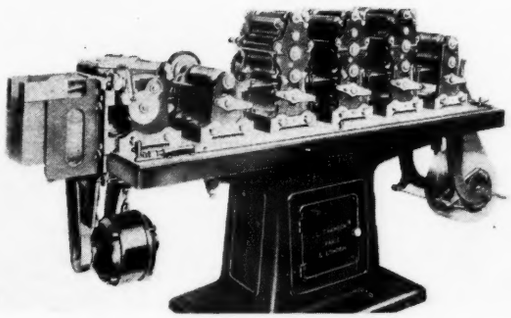
Oil-burning boilers designed particularly for the food industry are announced by Cleaver-Brooks Co., 740 North Plankinton Ave., Milwaukee, Wis. This boiler is of internal-combustion, four-pass, down-draft construction having the cool tubes at the bottom and thus eliminating danger of burning tubes due to collection of sediment. Low cost of installation is possible, since the boiler requires neither a heavy foundation nor a large stack. It may be equipped with completely automatic control to provide for low operating cost. This "Oil-built" boiler is made in all sizes from 10 to 125 boiler horsepower. The one illustrated is a 30-hp. unit. Cleanliness is one of the outstanding attributes of these boilers.

Differential Draft Controller

Dampers or blowers, or combinations of these, are regulated by a differential draft control system perfected by Mason Regulator Co., 1190 Adams St., Boston, Mass. The instrument is said to reduce fuel consumption, eliminate boiler smoking, cut labor costs and effect saving in blower power by maintaining conditions for proper combustion. The system consists of a differential pressure-control instrument which uses compressed air as an operating medium and air-operated diaphragm valves or mechanisms for controlling the speed of the blowers or the position of the dampers. Pressure connections are made at two points on the boiler, such as the stack and the forced-draft blower duct, and the differential between these two pressures actuates the control instrument. In addition, there is a fuel compensation arrangement which resets the draft differential to provide the correct quantity of air.



FOOD MANUFACTURERS



Automatic Printing Machine

Printing machines designed to fit into the manufacturer's production line and to turn out, automatically and continuously, the same printed job as many as 100 million times without variation in size, color, register or costs are made by Chambon Corp., 911 New York Ave., Union City, N. J. Paper fed from continuous rolls travels through the machine in a straight line, and the printing operations are performed successively by cylindrical, chrome-plated, bronze plates good for as many as 100 million impressions. Any number of colors may be used, and both sides of the paper can be printed at the same time. Designed for a particular job, the machines may be operated 85 to 95 per cent of the working day. Changeover to other jobs, it is asserted, can be made at low expense.

This printing equipment can be adapted to letterpress printing, dry offset, rotogravure or combinations of these. It can be used also for scoring, creasing, embossing, perforating, slitting and rewinding, sheeting, dieing out to shape, and other supplementary operations.

THE MANUFACTURERS OFFER

Valve Grinding—Methods for doing more than a dozen operations connected with general valve maintenance are presented in a booklet issued by South Bend Lathe Works, South Bend, Ind.

Canners—A new membership list of National Canners Association, Washington, D. C., is available.

Collapsible Tubes — The first issue of *Urgings*, published by White Metal Manufacturing Co., Hoboken, N. J., appeared in December and is to be followed by monthly issues. The booklet is a pocket-size, read-as-you-run type of publication which delivers new packaging ideas wrapped in bits of wit and humor.

Cold Magic—The story of the progress of refrigeration during the past 50 years is told in a dramatic manner in a beautifully illustrated and attractively bound 86-page booklet of York Ice Machinery Corp., York, Pa. The story treats of the value of refrigeration to commerce and industry, its relation to everyday life and something of the part played by the York company in the development.

Air Conditioning — In an 8-page illustrated bulletin, Economy Equipment Co., Inc., Chicago, Ill., discusses air conditioning as it pertains to problems of the candy manufacturer and describes conditioning equipment manufactured by the company. A similar booklet is devoted to air conditioning for the biscuit baker.

Electric Steam Generators—A well-illustrated booklet of General Electric Co., Schenectady, N. Y., presents the mechanical and electrical features of the company's electric steam generators and gives specifications and typical installations.

Welding — A 20-page illustrated booklet describing the features, characteristics and applications of Westinghouse Flex-Arc welders has been published by Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa.

Paints—Practical information on the relative light-reflecting properties of paints of different colors and on the distribution of light under direct, indirect, semi-indirect and natural lighting conditions is given in a 14-page illustrated booklet by New Jersey Zinc Co., 160 Front St., New York, N. Y.

Bread Cooling—A 6-page bulletin by American Society of Bakery Engineers tabulates information gathered from 32 plants on conditioned cooling of bread. Address Victor E. Marx, Secretary, 1541 Birchwood Ave., Chicago, Ill.

Temperature Regulators — A folder-leaflet by Sarco Co., Inc., 183 Madison Ave., New York, N. Y., describes the construction, operating characteristics and advantages of the company's temperature regulators for brine control in refrigeration.

Tender Meters — Principles and advantages of the Aminco tender meter, designed by American Instrument Co., Inc., 774 Girard St., N.W., Washington, D. C., to determine the degree of tenderness of food products, comprise the subject matter of an illustrated leaflet.

Oil Expeller — Three 4-page leaflets dealing with the mechanical features and the cost and labor-saving potentialities of the expeller-type press made by V. D. Anderson Co., 1935 West 96th St., Cleveland, Ohio, are offered by the company.

Sanitary Homogenizer Gage

Sanitation and proof against shock from sudden surges of pressure are incorporated in the design of a pressure gage developed for homogenizers by Taylor Instrument Cos., Rochester, N. Y. Fundamentally, the gage consists of a compressible bulb containing mercury, a Bourdon type gage, and a tube connecting the gage and the bulb. In operation, pressure in the machine compresses the bulb and forces mercury through the tubing to actuate the coil inside the instrument. The bulb of the gage is placed in a well on the homogenizer. This instrument may be had either as an indicator or as a recorder.

Small Variable-Speed Transmission

The smallest vertical, variable-speed transmission unit ever built has been perfected by Reeves Pulley Co., Columbus, Ind., according to the maker. The unit can be equipped with an individual driving motor, an auxiliary countershaft for greater speed reduction, and with the extended lever type mechanical automatic control. A completely inclosed design for protection against chemicals and abrasives is available. The speed range of this Reeves unit, No. 0000, is from 2:1 to 6:1, inclusive. The horsepower rating varies from ¼ to ¾. The size of the unit illustrated may be noted by comparison with the 15-in. ruler.

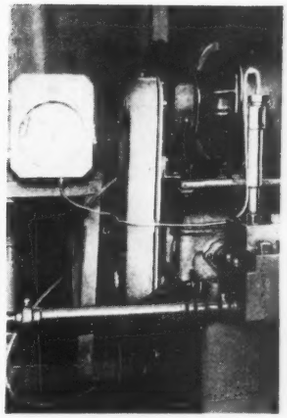
Vacuum Ovens For Cooking Hams

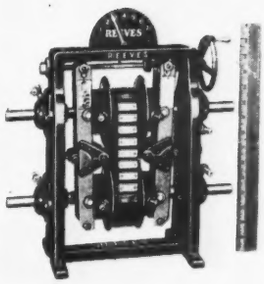
Shrinkage is reduced by some 50 per cent in hams cooked in a vacuum oven developed by Vacuum Ovens, Inc., 1616 Walnut St., Philadelphia, Pa., according to the manufacturer. Also, the meat is uniformly cooked, has a rich flavor and a firm binding quality, and it keeps well. These ovens cook by convection of heat in vapor created under vacuum at low temperature. Heat is supplied by steam in a closed coil. Water in the bottom of the oven gives off the vapor. The meat is cooked in ham retainers, the average load being 60 containers, or 480 to 720 lb. of meat.

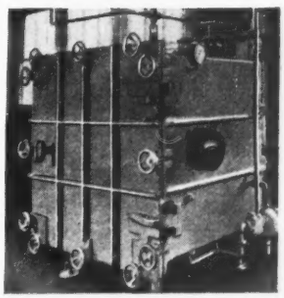
Motor Tuning Service Offered

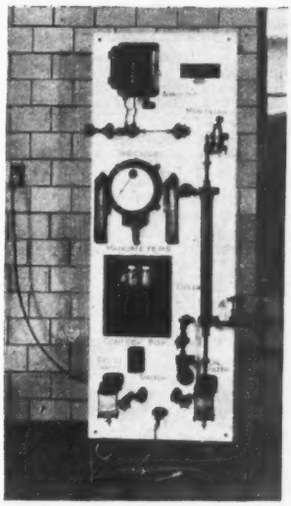
Efficiency in motor fleet operation is said to be greatly improved by a motor tuning service offered by Cities Service Co., 60 Wall St., New York, N. Y., to companies using its gasoline. In checking motor operations, an exhaust gas analyzer recently developed by the company is employed. If the combustion is shown to be inefficient, the compression, ignition, timing and automatic spark control are checked with specially designed instruments to locate the trouble, an efficiency determination being made after each fault is corrected. If these adjustments fail to bring the efficiency up to par, the carburetor is examined. Jet adjustments, or installation of new jets, eliminate any fault in carburetion.

In analyzing the exhaust gas, the instrument passes a sample through a washer and filter, then premixes it with air and passes it over a hot platinum wire which acts as a catalytic agent to cause combustion. The heat developed increases the resistance of the wire, and the change is translated into per cent combustion efficiency through a Wheatstone bridge arrangement and a galvanometer.









CONSTRUCTION NEWS

	Proposed Construction Pending	Contracts Awarded — Awarded December	Contracts Awarded — Cumulative 1932 — No. Awards	Contracts Awarded — Cumulative 1932 — Total
Bakery Products	$28,000	$68,000	29	$3,059,000
Beverage	7,117,000	1,000,000	10	1,502,000
Canning and Preserving	130,000	29,000	18	788,000
Confectonery	.....	.....	1	30,000
Grain Mill Products	28,000	40,000	22	3,813,000
Ice, Manufactured	30,000	.....	37	1,751,000
Meats and Meat Products	208,000	103,000	32	2,080,000
Milk Products	225,000	50,000	41	3,329,000
Sugar	17,000	.....	1	40,000
Miscellaneous	252,000	100,000	26	2,682,000
Total	$8,035,000	$1,390,000	217	$19,074,000

PROPOSED WORK BIDS ASKED

Abattoir—Chieffetz-Greenberg Co., 264 Hudson Ave., Brooklyn, N. Y., plans to construct a 2 story, 99x195 ft. abattoir at Hudson Ave. and Concord St., Brooklyn. Estimated cost $90,000. M. Klein, 65 Court St., Brooklyn, is architect.

Abattoir—North 9th Street Packing Co., 153 Centre St., New York, N. Y., plans the construction of a 2 story, 100x150 ft. abattoir at North 9th St. and Driggs Ave., Brooklyn, N. Y. Estimated cost $70,000. M. Klein, 65 Court St., Brooklyn, is architect.

Bakery—Vincent Pemisi, 107-44 Sutphin Blvd., Jamaica, N. Y., plans the construction of a 1 story bakery and store building on Sutphin Blvd. Estimated cost with equipment $28,000.

Canning Plant—Ocean Industries, San Diego, Calif., is having plans prepared for a canning plant on Turtle Bay, Lower California, Mexico. Estimated cost $90,000.

Canning Plant—Western Canning Co., Chico, Calif., is having plans prepared by W. Lowe, Archt., 1056 Hubert Rd., Oakland, Calif., for a canning plant. Estimated cost with equipment $40,000.

Bottling Plant—Eilert Beverage Co., H. F. Eilert, Pres., West 32nd St. and Sackett Ave., Cleveland, O., plans to improve the bottling plant at its brewery. Estimated cost $50,000. Maturity depends upon dry law change.

Brewery—John d'Agostino, c/o L. N. Renault & Sons, Egg Harbor, N. J., plans to alter and equip brewery at 10th St. and Montgomery Ave., Philadelphia, Pa. Estimated cost $500,000.

Brewery—The Aztec Brewing Co., San Diego, Calif., recently organized with $1,000,000 capital stock, plans to construct a brewery here. Herbert L. Jaffe, E. R. Baker and I. Wiks, San Diego, are directors. Richard Griesser, 64 West Randolph St., Chicago, Ill., is architect.

Brewery—Best Brewing Co., 1317 Fletcher St., Chicago, Ill., plans to remodel its brewery to have a capacity of 150,000 bbl. annually. Estimated cost $400,000. Maturity depends upon repeal of dry law.

Brewery—Buckeye Producing Co., Champlain St., Toledo O., plans to expend $200,000 for extensions and improvements to brewery. D. W. Cummerow is secretary.

Brewery—Cleveland Home Brewing Co., O. W. Beltz, Pres., 2501 East 61st St., Cleveland, O., plans to improve its brewery here. Estimated cost $125,000. Maturity depends upon repeal of dry law.

Brewery—Cremo Brewery, John Skritulsky, Pres., Belden St., New Britain, Conn., contemplates the construction of a brewery. Estimated cost $60,000.

Brewery—First Prize Brewers, c/o R. R. McGee, 505 5th Ave., New York, N. Y., recently incorporated, plan to purchase and alter an existing brewery or construct a new plant. Estimated cost to exceed $28,000.

Brewery—Flower City Brewing Co., c/o N. T. Lyon, attorney, 19 Main St., W., Rochester, N. Y., recently incorporated with $575,000 capital stock, plans to alter existing brewery or construct a new one. Estimated cost to exceed $28,000.

Brewery—Haberle Beverage & Products Co., 500 Butternut St., Syracuse, N. Y., plans to modernize its brewery here. Estimated cost $200,000.

Brewery—Theodore Hamm Brewing Co., 681 East Minnehaha St., St. Paul, Minn., plans to alter and install new equipment in brewery. Estimated cost to exceed $30,000.

Brewery—Moore & Quinn, 102 South Crouse Ave., Syracuse, N. Y., plan to alter and install new equipment in their plant here. Estimated cost to exceed $28,000.

Brewery—Gustave Muller, Miami, Fla., plans the construction of a brewery. Estimated cost $500,000. Maturity depends upon repeal of dry law.

Brewery—North American Brewing Co., Walter Boerschuck, Vice Pres., Wilson and Greene Ave., Brooklyn, N. Y., plans to construct additions to its brewery and install new equipment. Estimated cost $750,000.

Brewery—North American Brewery Co., 2336 Bosworth Ave., Chicago, Ill., will soon receive bids for addition to brewery, to increase capacity from 75,000 to 100,000 bbls. annually. Estimated cost $100,000. Richard Griesser & Son, 64 West Randolph St., Chicago, is architect.

Brewery—Peoples Brewery, c/o G. L. Deano, Pres., 740 Perdido St., New Orleans, La., contemplates the construction of a brewery at 524 South Johnson St., New Orleans. Estimated cost $200,000.

Brewery—Piel Bros., Wm. Piel in charge, Georgia Ave., Brooklyn, N. Y., plan to construct additions to brewery. Estimated cost to exceed $1,000,000.

Brewery—Premier Products Co., c/o Pabst Corp., 917 Juneau Ave., Milwaukee, Wis., plans to alter and install new equipment in plant. Estimated cost $1,000,000.

Brewery—Sayre Brewing Co., Sayre, Pa., plans to alter and install new equipment in brewery. Estimated cost to exceed $28,000.

Brewery—Syndicate, c/o H. C. Forbes and Harry S. Proctor, 565 5th Ave., New York, N. Y., plans to alter brewery at 3rd Ave. and 168th St., New York, and install new equipment. Estimated cost $40,000. Maturity indefinite.

Brewery — J. F. Trommer, 1632 Bushwick Ave., Brooklyn, N. Y., plans to construct an addition to brewery and install new equipment. Estimated cost $1,000,000.

Brewery—Vernon Brewing Co., Vernon, Calif., is having plans prepared for the construction of a 4 story brewery and a 5 story bottling plant at Santa Fe Ave and 52nd St., Vernon. Estimated cost $150,000. F. A. Linck, 917½ Dos Robles Pl., Alhambra, Calif., is architect and engineer.

Brewery — Murray Vorhees, Lakeside Park, Ky., plans to alter and install new equipment in brewery at Covington, Ky. Estimated cost $500,000.

Ice Cream Plant — Glover Ice Cream Co., Frankfort, Ind., is having plans prepared for an ice cream plant. Estimated cost $40,000. Project will mature in Spring.

Ice Cream Plant—C. Mamos, West Concord, N. H., is having plans prepared by N. Simons, Archt., 33 North Main St., Concord, N. H., for a 2 story, 40 x 50 ft. ice cream plant. Estimated cost $28,000. Project will mature in Spring.

Pasteurizing Plant — A. Adler, lessee, 447 East 133rd St., New York, N. Y., plans to alter 2 story, 75 x 100 ft. brick garage at above address into milk pasteurizing plant. Estimated cost $28,000. W. H. Fuhrer, 505 4th Ave., New York, N. Y., is architect.

Dairy—Sanders A. Wertheim, Wanamassa Dr., West Asbury Park, N. J., plans to rebuild his dairy plant recently destroyed by fire. Estimated cost $40,000.

Ice and Dairy Plant—Cambridge City Ice and Dairy Co., Connersville, Ind., is having plans prepared for a plant here. Estimated cost $29,400.

Milk Plant — Borden Milk Products Co. of Illinois, Sycamore, Ill., and 326 West Madison St., Chicago, Ill., plans to rebuild its plant at Sycamore. Estimated cost $60,000. Maturity indefinite.

Ice Plant—High Grade Packing Co., 2627 D St., Galveston, Tex., is receiving bids for a 2 story, 60 x 70 ft. addition to its ice plant. Ben B. Milam, 315 W. T. Waggoner Bldg., Fort Worth, is architect.

Honey Extracting Plant — Frank Shipman, Lander, Wyo., plans to repair his honey extracting plant recently damaged by fire. Estimated cost $17,000.

Macaroni Factory—Philadelphia Macaroni Co., 11th and Catherine Sts., Philadelphia, Pa., plans the construction of a 5 story macaroni manufacturing factory. Estimated cost $100,000.

Grist Mill—Phillip Best & Co., Paris, Ill., plans to alter and enlarge its grist mill (brewery grist). Estimated cost $28,000.

Packing Plant—Swift & Co., South San Francisco, Calif., plans the construction of an addition to its factory at 312 Clay St., Oakland. Estimated cost $20,000.

Sausage Factory — Primeal Provision Co., lessee, Randall Ave. and Longfellow St., New York, N. Y., plans to alter and equip premises at above address for a sausage factory. Estimated cost with equipment $28,000.

Storage Bins—National Sugar Refining Co., 55th Ave. and 2nd St., Long Island City, N. Y., plans to construct 1 story, 46 x 96 ft. storage bins at 56th Ave. and 1st St. Estimated cost $17,000.

Vegetable Oil Plant—International Vegetable Oil Co., Greenville, Miss., plans to alter and improve its plant here. Estimated cost $60,000.

Citrus Wrapping Plant — Crown Zellerbach Corp., c/o P. A. McDonald, Pres., San Francisco, Calif., plans to construct a plant at Harlingen, Tex., for the manufacture of wrappings for fruit and vegetables. Estimated cost $75,000. Address S. G. Yaunt Co., Corpus Christi, Tex., for further details.

CONTRACTS AWARDED

Bakery—Brownel Realty Co., 267 South 4th St., Brooklyn, N. Y., awarded contract for bakery and storage building at 99th Ave. and 22nd St., Queens Village, N. Y., to S. F. Musselwhite, 804 St. Johns Pl., Brooklyn. Estimated cost $28,000.

Bakery — Dugan Bros., 161 Abington Ave., Newark, N. J., awarded contract for altering 1 story bakery here to Robert Allen, 319 Mt. Vernon Ave., Newark, N. J. Estimated cost $40,000.

Brewery — Chicago Brewing Co., 64 West Randolph St., Chicago, Ill., awarded contract for constructing 4 story, 250 x 325 ft. brewery at Diversey and Karlov Aves., to Paschen Bros., Inc., 33 North La Salle St., Chicago. Estimated cost $1,000,000.

Canning Plant — Stokley Bros. Canning Co., Greenwood, Ind., awarded contract for 2 story, 100 x 120 ft. canning plant to L. Stahl, 4038 Otterbein Ave., Indianapolis, Ind. Estimtaed cost $29,400.

Dairy — McCreery Co., Urbana, Ohio, will construct dairy by day labor. Owner will buy all materials. Estimated cost $25,000.

Dairy—Edward Minieschasker, Tigerton, Wis., plans the construction of a 2 story, 83 x 98 ft. dairy and ice cream plant. Work will be done by day labor.

Grain Elevator—Boyden Farmers Co-operative Assn., Boyden, Ia., awarded contract for grain elevator to have capacity of 30,000 bu., including warehouse and feed mill, to T. E. Ibberson & Co., 300 Corn Exchange Bldg., Minneapolis, Minn.

Packing Plant—Circle Packing Corp., 317-25 Winstanley Ave., East St. Louis, Ill., awarded contract for 2 story, 56 x 64 ft. addition to meat packing plant to Menges & Mange, 3014 Chouteau Ave., St. Louis, Mo.

Slaughter House—Darling & Co., Tyler St., Toledo, O., awarded contract for new slaughter house to H. J. Speiker Co., Elm St., Toledo. Estimated cost $63,000.

Sausage Factory—Grote & Weigel, 73 Spruce St., Hartford, Conn., awarded contract for addition to factory on Spruce St., to Industrial Construction Co., 721 Main St., Hartford. Estimated cost $15,000.

Warehouse—Best Foods Products Co., 1900 Bryant St., San Francisco, Calif., awarded contract for 3½ story, 82 x 100 ft. warehouse to Larsen & Larsen, 629 Bryant St., San Francisco. Estimated cost $59,850.

Warehouse—United Grocery Co., 593 South 21st St., Irvington, N. J., awarded contract for 1 story, 110 x 228 ft. warehouse to the Fatzley Co., Inc., 11 Hill St., Newark, N. J. Estimated cost $40,000.